

February • 1956

Finish

THE MAGAZINE OF
Appliance AND
Metal Products MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

NEW

-and News-making!



The PATTERSON

futura BALL AND PEBBLE MILL

FEATURING

- Accurate Temperature Control
- 20% Greater Jacket Area
- Corrosion Control in Water Jacket
- Motor Drive Integral with Mill Stand
- New Type Outlet Valve
- Optional Bearing Design

... breaks all records for grinding efficiency, affords operating safety and convenience heretofore unknown. Rigidity, alignment and precision machining are unsurpassed. Truly the Futura is the result of advanced engineering design. This is a mill that will operate profitably, stand up to the daily grind for years with the lowest of low maintenance, and will return its investment cost time and again. We invite you to write today for complete details of the FUTURA Mill.

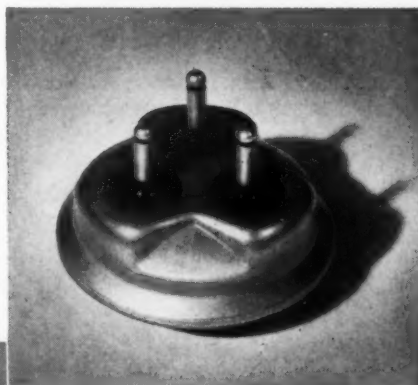
The Patterson Foundry and Machine Company East Liverpool, Ohio, U. S. A.

NEW YORK, BOSTON, BALTIMORE, PHILADELPHIA, PITTSBURGH, DETROIT, CINCINNATI,
ATLANTA, CHICAGO, ST. LOUIS, HOUSTON, DENVER, LOS ANGELES, SAN FRANCISCO,
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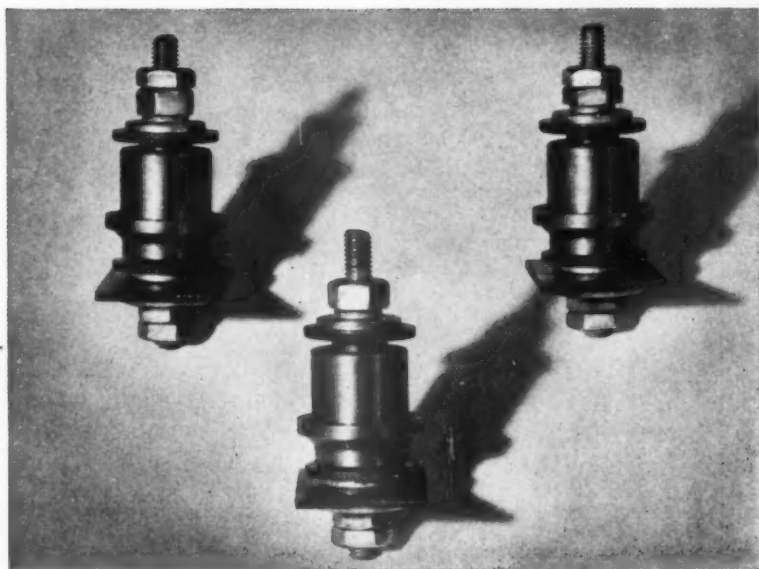
The Patterson Foundry and Machine Company, (Canada) Limited
Toronto, Canada
MONTREAL

Armco Type 446 Stainless Steel Wire

helps
this →



Armco Type 446 Stainless Steel Wire was selected for the pins in the hermetically-sealed terminal (above) because of its coefficient of expansion, corrosion resistance and good electrical conductivity. This new unit does the work of the other three parts formerly used.



← replace
these

Here's how one manufacturer reduced three large, complicated parts to one small, compact unit.

Electrical terminals for refrigerator compressors used to consist of three separate parts. Each part contained as many as 17 individual components made from various materials. The newest terminal has only *three materials* fused into a *single* hermetically-sealed unit.

The tiny new unit has a carbon steel housing, glass insulation, and Armco Type 446 Stainless Steel Wire for terminal pins. The pins are fused into the glass, which in turn is fused to the housing.

When designing this unit, the manufacturer's engineers

faced a problem. Coefficient of expansion of the metal pins had to be nearly equal that of the housing and insulation to withstand the thermal shock of welding to the compressor housing. The pins had to be corrosion resistant because surface oxides would reduce electrical conductivity. And plating was not only costly but impractical.

Engineers found that Armco Type 446 Stainless Steel Wire solved the problem on all counts.

Let Armco engineers work with you when you redesign. Perhaps their suggestions can help you cut costs or make more efficient parts with one of Armco's Special Steels. Write us, or call the nearest Armco Sales Office.

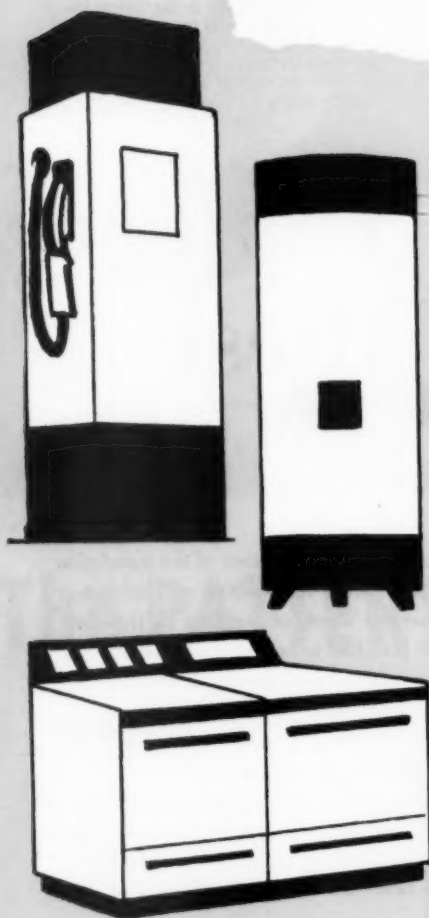
ARMCO STEEL CORPORATION

916 CURTIS STREET, MIDDLETOWN, OHIO



SHEFFIELD STEEL DIVISION • ARMCO DRAINAGE & METAL PRODUCTS, INC. • THE ARMCO INTERNATIONAL CORPORATION

Announcing *Nigron*



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- Spray or Dip
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Every finishing department needs a versatile, general utility black enamel. #3842-9 Nigron Enamel fills this need admirably, either as the primary production line finish or to do the many odd jobs that must be handled such as bases, legs, skirts, interior parts, etc.

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February • 1956

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finish

MONTHLY TRADE PUBLICATION

Established January 1944

Published by

DANA CHASE PUBLICATIONS

York Street at Park Avenue

Elmhurst, Illinois

Telephone • TErrace 4-5280

TErrace 4-5281

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. Includes technical and practical information on plant facilities and manufacturing problems from raw metal to safe delivery of the finished product, with special emphasis on fabrication, metal preparation, metal finishing, assembly, and packaging and shipping.

Free controlled circulation to management, purchasing, engineering and key plant personnel in metal product manufacturing plants. To others, subscription price is \$5.00 per year, domestic. To all other countries \$8.00 per year (U.S. funds).

Editor and publisher • **DANA CHASE**
Editor's assistant • **R. W. RICHTER**
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**METAL PRODUCTS MANUFACTURING
FROM RAW METAL TO FINISHED PRODUCT**

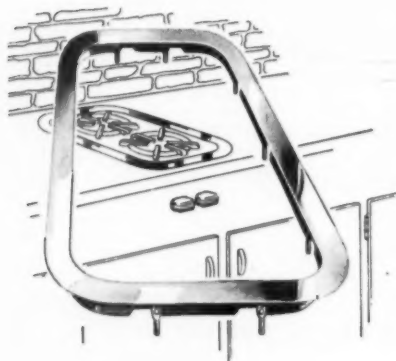
*For the Built-In Oven
and the Drop-In
Cook Top...*

PYRAMID

FRAMES AND RIMS



Frames and rims are two items in the Pyramid line that will help you step up sales with smarter appearance. From lamp shades to kick plates, Pyramid specializes in sparkling stainless steel trim for modern appliances.

The latest trend in cooking appliances is the built-in oven and the drop-in cook top. If you're going after this market, you'll want to know about PYRAMID Stainless Steel FRAMES and RIMS... Completely fabricated, ready to attach to your unit, they combine function with sparkling appearance designed to step up sales. Write for your copy of the Pyramid "Plan Book of Metal Mouldings"...today!

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No one connected with the design or manufacture of any appliance should be without a copy of this book containing hundreds of standard and special mouldings. Send for your free copy today.

Without obligation, please send copy of
"Plan Book of Metal Mouldings." F-2

Name _____ Title _____

Firm _____

Address _____

MEETINGS

PEI ARCHITECTURAL WINTER CONFERENCE

Porcelain Enamel Institute Architectural Porcelain Enamel Winter Conference, The Sheraton Hotel, Chicago, February 8-9.

PMI SPRING MEETING

Annual Spring Technical Meeting, Pressed Metal Institute, Hotel Carter, Cleveland, March 14-16.

MATERIALS HANDLING CONFERENCE

Conference on Materials Handling, Purdue University's Department of Industrial Engineering and Indianapolis Chapter of American Materials Handling Society, Purdue Memorial Union Building, Lafayette, Indiana, February 16-17.

ENAMELERS CLUB MEETINGS

Central District Enamellers Club, Hotel Manger, Cleveland, Ohio, March 16.
Midwest Enamellers Club, La Salle Hotel, Chicago, March 24.

REINFORCED PLASTICS CONFERENCE

The Society of the Plastics Industry, Inc., 11th Annual Reinforced Plastics Division Conference, Hotel Chalfonte-Haddon Hall, Atlantic City, New Jersey, February 7-9.

ASTE CONVENTION AND INDUSTRIAL EXPOSITION

American Society of Tool Engineers, Industrial Exposition and 24th Annual Convention, International Amphitheatre, Chicago, March 19-23.

AMA ELECTRONICS EXHIBIT

Second annual Electronics Conference and Exhibit, American Management Association, Hotel Commodore, New York, February 27-29.

MIDWEST WELDING CONFERENCE

Annual Midwest Welding Conference, Armour Research Foundation, Illinois Institute of Technology, Chicago, February 1-2.



SHE doesn't need to "PUZZLE OUT" a

LUX

FULLY AUTOMATIC RANGE TIMER

MINUTE MINDER
Bell Chime Reminder
for Top Burner Cooking



SIMPLIFIED 2-STEP AUTOMATIC SETTING

Big sales impact the new LUX Range Timer will add to your ranges is *simplicity*. There's no need for a housewife to "puzzle out" diagrams, struggle with instruction manuals, call in service men. She just sets bottom "time-to-start" knob and righthand "hours-to-cook" knob. Oven starts and stops automatically.

Write, wire or phone for full specifications and a LUX Timer to test in your own lab.



1 Time-to-start



2 Hours-to-cook

PLUS

Exclusive one knob

"cook-now" timing.

Separate Minute Minder

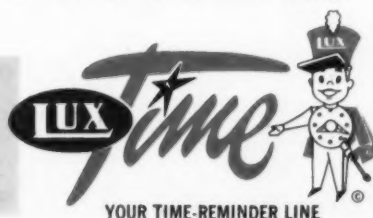
Top-Side Control

New Synchronous Motor Requiring
No Lubrication.

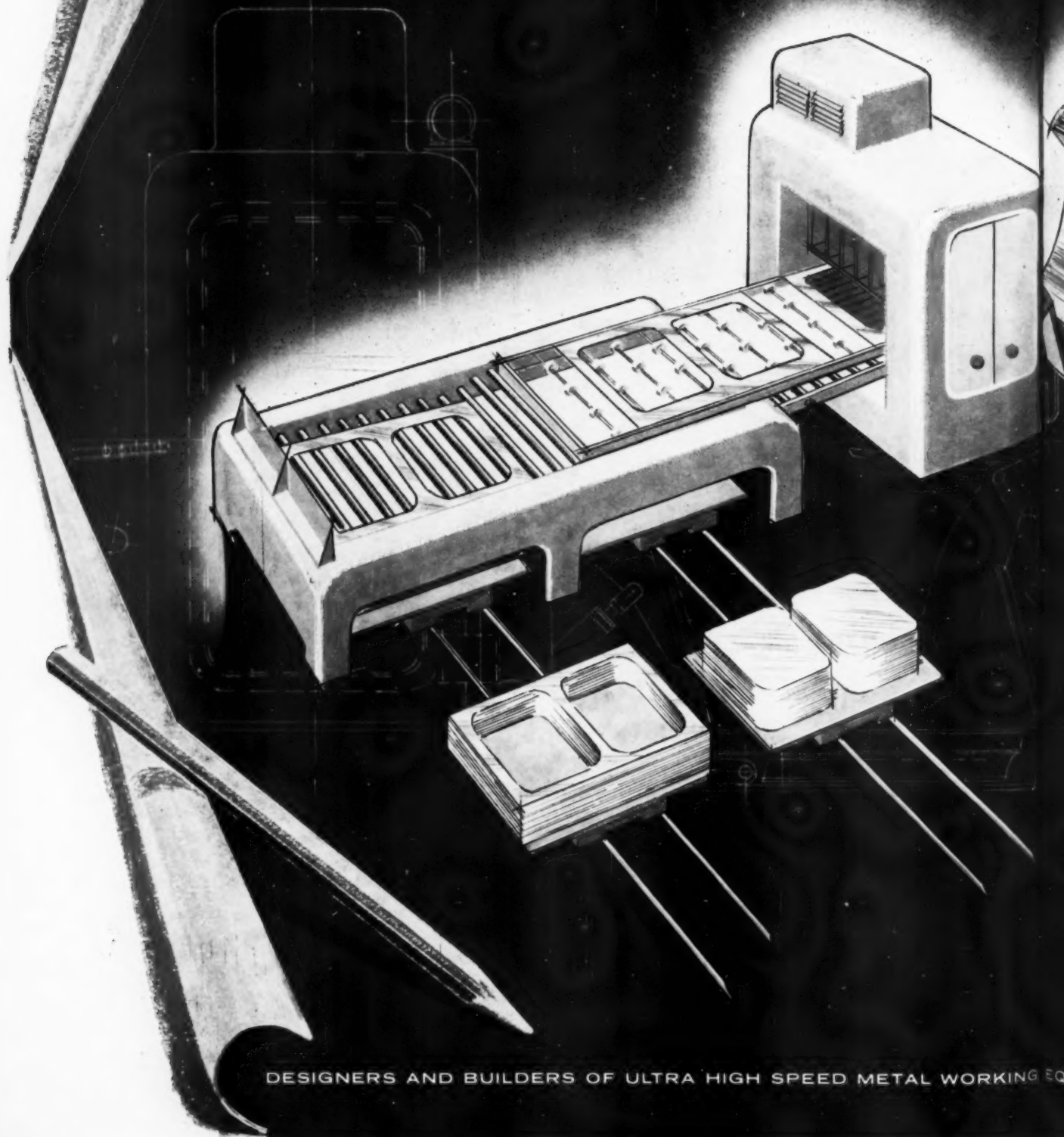
Snap-in Mount that Eliminates
Studs and Rings.

Smart 3-Dimensional Styling

DEPARTMENT F
THE LUX CLOCK MFG. CO., INC.
WATERBURY 20, CONNECTICUT

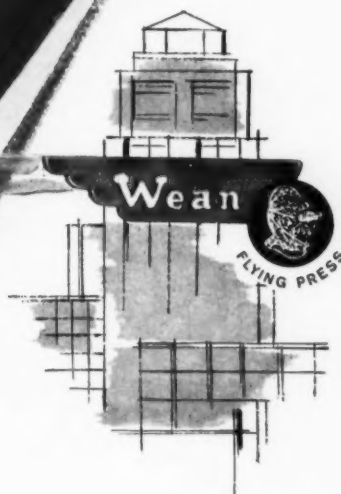
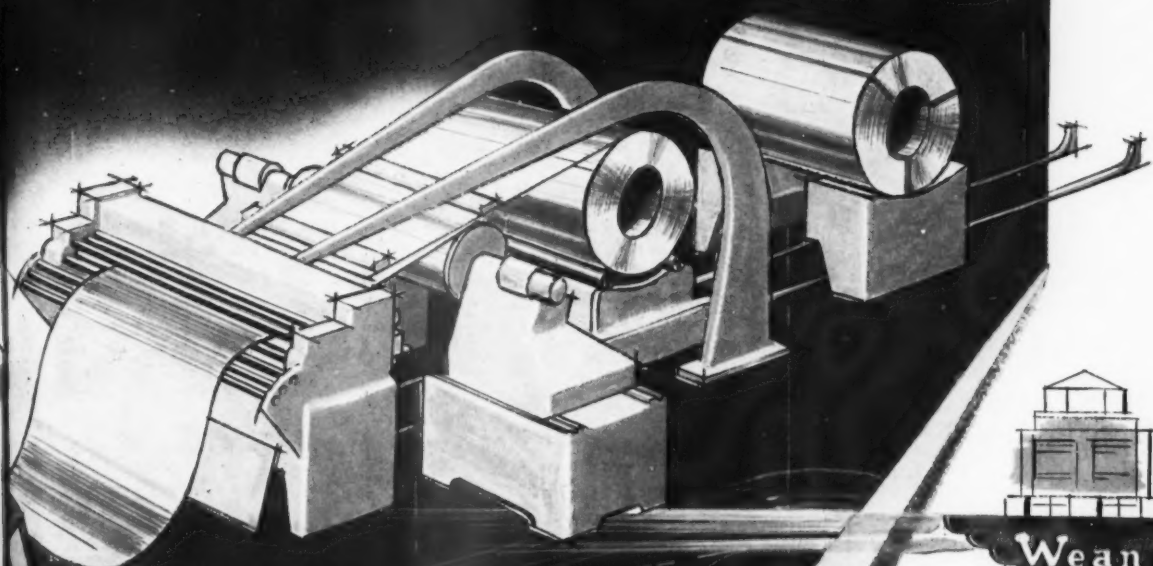


The **"NEW LOOK"**



DESIGNERS AND BUILDERS OF ULTRA HIGH SPEED METAL WORKING EQ

" in Production Stamping



AUTOMATION for the pressroom is just around the corner according to a number of the nation's leading press experts who have studied the revolutionary "Flying Press" approach recently announced by the Wean Equipment Corporation.

Taking a coil of steel directly from the mill, the Wean Flying Press Line decoils, levels, measures, blanks, sorts, counts and piles the finished piece on trans-car ready to be rolled to the next operation — at a speed heretofore considered unobtainable.

Present engineered lines will handle coils up to 72 inches in width — cutting lengths from 12 inches to 8 feet.

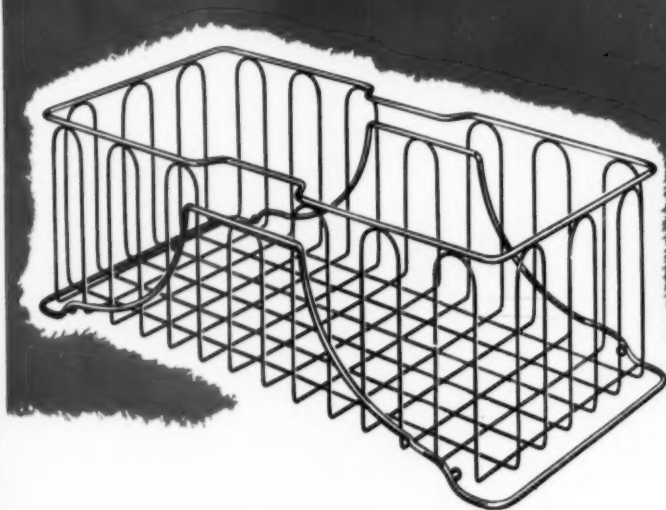
Some of the more outstanding features of the line: floor mounted for quick, inexpensive installation with built-in die loading mechanism; a new coil sticker that eliminates manual threading; a high speed, non-scratch piling mechanism and several newly developed "automated" devices that assure a continual flow of metal through the press.

If low cost, mass production stamping appeals to you, why not contact a Wean Equipment engineer for full particulars? Write direct or call the Wean office in Chicago, Detroit or Newark, N. J.

Wean

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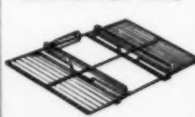
FROZEN JUICE RACKS



DISH-WASHER RACKS



REFRIGERATOR TRAYS



from the Editor's Mail

thousands of special sections

The Special Rheem Section of the January issue of *finish* Magazine was delivered to me this morning. I can't tell you how thrilled we are with the wonderful job that you and your associates have done in portraying our Company.

As you know, we plan to give wide distribution to many thousands of copies of this special section to customers, vendors and suppliers, important security houses and to all of our employees. We feel that this story will have considerable impact in all of these areas across the country.

It has been a great pleasure to work with you and your associates and on behalf of the Rheem Manufacturing Company, I wish to congratulate you on a job well done.

Howard W. Wright, Jr.
Director of Public Relations
Rheem Manufacturing Company
Chicago, Illinois

The pleasure was mutual and our editors greatly appreciated the opportunity of working with the Rheem organization and in the Rheem plants.

tears out important articles

I would appreciate your sending *finish* to Mr. Burton Felder, Assistant Range Engineer. . . He should see your publication regularly, but I frequently find it desirable to tear out important articles from my own copy, making it inadequate to pass on to him.

R. E. Dadson, Chief Range Engineer
Kelvinator Division American Motors Corporation
Detroit, Michigan

We gladly added Mr. Felder to our mailing list, so now you can tear up your own copy as much as you like. — Eds.

please send brochure

Please mail 12 page brochure on rubber . . . on page 81 of December *finish* magazine. I will take advantage of this opportunity to thank you for mailing *finish* to us regularly, and to compliment you in its format and the quality of articles.

J. A. Janson, Manager Manufacturing Div.
Universal Milking Machine Div. National Cooperatives, Inc.
Albert Lea, Minnesota

The brochure is on the way. Eds.

interested in subscription

Please send me a copy of your magazine *finish* and inform me concerning the subscription rate.

L. Diveley, Finishing Engineer
Cutler-Hammer, Inc.
Milwaukee, Wisconsin

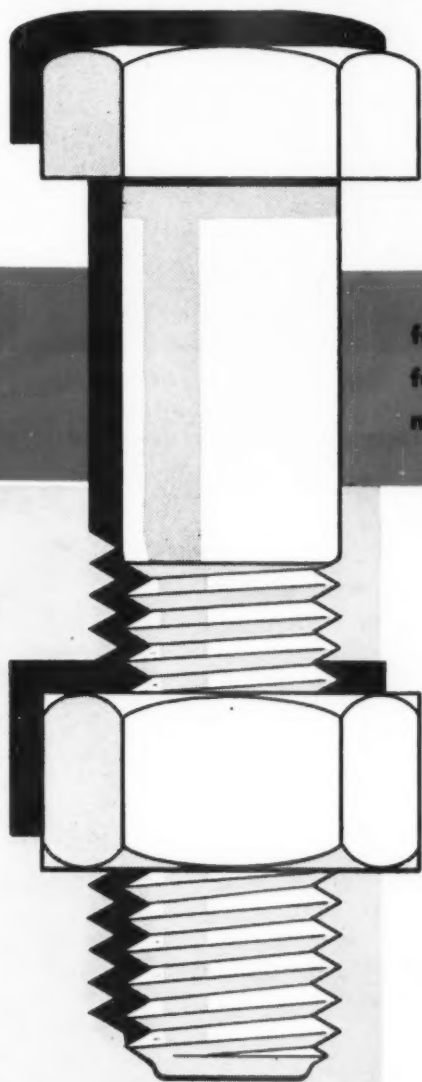
Circulation information has been sent. Eds.

cold roll forming

In reading your recent issue of *finish* I noted an interesting article in the new industrial literature section.

The section of interest to me is . . . a book on cold roll forming. Would appreciate your forwarding to me at once all information you can regarding this booklet.

W. E. Ranz, Sales Department
Hynes Steel Products Company
Youngstown, Ohio



look to **UNIVERSAL—** **Westinghouse does—**

for the manufacture of precision quality fasteners. All types and materials of screws, nuts, bolts, etc.



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6007 Euclid Avenue
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MILWAUKEE, WISCONSIN
204 Broadway
Broadway 2-1650

Market facts Bulletin NO. 2

FERRO CORPORATION • CLEVELAND 5, OHIO

Independent surveys among 6,000 representative appliance dealers show Porcelain enamel a big favorite, particularly for the interior of home freezers. For instance:

Question: "Which of these types of finish do you consider best for the inside of Home Freezers?"

Answers: 51.5% voted for Porcelain enamel, 25.7% for the second-choice material, with 3.8% expressing no opinion.

That's not all! Read how they voted on home freezer exteriors:

Question: "Which of these types of finish do you consider best for the outside of Home Freezers?"

Answers: While 58.7% voted for the type of finish now generally used, 25.9% voted for Porcelain enamel . . . and 5.1% expressed no opinion.

HOW DEALERS VOTED ON PRINCIPAL ADVANTAGES OF MATERIALS AND FINISHES

| | Material "A" | Material "B" | Finish "C" | Finish "D" | Porcelain Enamel |
|---|-----------------|-----------------|---------------|---------------|---------------------|
| Total Respondents—1,663 | | | | | |
| Appearance from Sales Viewpoint | 83 | 348 | 130 | 436 | 1,096 |
| Sanitation and Ease of Cleaning | 81 | 487 | 101 | 241 | 1,295 |
| Resistance to Wear | 136 | 737 | 71 | 112 | 973 |
| Resistance to Rust and Corrosion | 384 | 763 | 79 | 108 | 972 |
| Resistance to Soaps and Alkalies | 77 | 549 | 60 | 83 | 1,182 |
| Resistance to Heat | 159 | 572 | 59 | 98 | 907 |
| Permanence of Finish | 151 | 800 | 62 | 141 | 1,091 |
| Total Number of Mentions | 1,071 | 4,156 | 562 | 1,219 | 7,516 |
| Number of Respondents Responsible for Mentions | 507 | 1,040 | 245 | 570 | 1,489 |

Pulsation Chamber. Just one example of a great variety of Danielson precision assemblies.



LOOK TO DANIELSON

for a

VARIETY

of

Quality Products



Air Shroud for air cooled engines. A typical Danielson spot welding assembly on automatic spot welders for low cost and speed production.

Fabricated steel cabinets of all sizes and description.



Deep Draw Aluminum part made in three draws.



Pictured here are a few of the many and varied items we produce for satisfied customers.

What we cannot picture is the high quality and service Danielson is equipped to give you — and remember too, — we are deep draw specialists — try us!

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MANUFACTURING COMPANY

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your ONE BEST source
for ALL Porcelain
Enameling Supplies

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|--------------------------|---|
| Slump Tester | Rotosprays and Parts |
| Thickness Gauge | Automatic Spray Machines |
| Ferro Built Dryers | Continuous Furnace Tools |
| Asbestos Mitts | Spray Equipment: Safety Block and Tackle, Containers, |
| Asbestos Slip-on Patches | Transformers, Compressors, Fans, Tanks, |
| Stencil Brush | Turntables, Parts, Hose, Fittings, Reflectors, etc. |
| Adjustable Edging Brush | Muffles, Muffle Brick and Tile |
| Flat Cleaner Brush | Radiant "W" Tube Muffle Centre Wall |
| Bolt Hole Brush | Rubbing Stones, White Alundum, 60 Mesh, 80 Mesh |
| Beading Sponges | and 150 Mesh |
| "Ferro-Processed" Clays | Frits, Porcelain Enamel, Acid-Resisting and Non-Acid- |
| Electrophotometer Unit | Resisting: Ground Coats, Cover Coats, Black Edging |
| Color Oxides by Ferro | Furnaces—Batch, Continuous, Laboratory—All Fuels |
| Magnetic Separators | Complete Line of Laboratory Equipment |
| Plain Loop Racks | Boric Acid • Ammonium Carbonate • Zinc Oxide • |
| Hanging Racks | Borax • Bentonite, Purified • Gum Tragacanth • |
| Point Loop Racks | Sodium Nitrite • Magnesium Carbonate • Potassium |
| Straight Point Bars | Carbonate • Nephelite-Syenite • Single Nickel Salts |
| 1" Triangle Bars | Compressed-air-operated Ejectopump |
| Burning Bars | Porcelain Lining Blocks and Balls |
| | Pickling Equipment |
| | Mills |

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you don't have a copy of
our latest price list write us;
we'll mail you one promptly.



FERRO CORPORATION

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In Canada: Ferro Enamels (Canada) Ltd., Oakville, Ontario

THE finish **spotlight**



A Hotpoint electric washer for 1956 can be set for hot or warm wash water and warm or cold rinse water. User can pre-select desired washing time. Two cycle dial has separate cycles for washing regular fabrics and delicate or manmade materials. Lighted pushbutton controls are featured on this washer and a matching dryer.

MACCO MACHINE CLEANER NO. 71-D

METAL SURFACE
PROTECTED
WITH MACCO
71-D
MACHINE
CLEANER

WITHOUT
71-D
PROTECTION

a phosphate cleaner and rust inhibitor
**GIVES BETTER PAINT
ADHESION**

**71-D prevents rust spread
and rust blisters**

A MACCO CASE HISTORY*

As in all fields today, purchasers of metal products are constantly demanding more and more in the quality of their paint finishes.

By far the most efficient and economical method of preparing metals for the finest and most enduring paint job is by use of Macco M.C. No. 71-D. Laboratory and shop tests prove that, on steel, cast iron, aluminum or die cast, Macco M.C. No. 71-D provides a corrosion-resistant phosphate coating comparable in quality to that formerly available only through expensive and elaborate methods of preparation.

TESTED ADVANTAGES OF MACCO M.C. No. 71-D CLEANER

1. Cleans soil from metals and etches in one operation.
2. More economical because of longer life of solution.
3. Gives microscopic phosphate coating, greatly aiding in paint adhesion and corrosion resistance.
4. No special equipment required.
5. Never hardens in the drum.
6. Gives excellent protection against rust prior to painting.
7. Simple to control solution.
8. Can be run in conventional one, two, or three stage washers, as well as in other types.

Use Macco M.C. No. 71-D Cleaner and Phosphate Coating and add immeasurable quality to the finish of your product.

*Actual case history, names, etc. can be had by writing today to

LEADING METAL PROCESSORS

endorse its use for ...

- CAMERAS
- TAPE RECORDERS
- TV CABINETS
- LAWN FURNITURE
- APPLIANCES
- MOLDING
- TOYS, Etc.

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PRODUCTS COMPANY

Makers of Better Metal-Working Compounds
Since 1931

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Large diameter coils leaving the temper mill at our Indiana Harbor Works, East Chicago, Ind.

The Big Coil Lineup

Such a lineup of big coils is an everyday sight in our cold reduced sheet mill. With complete integration of steel production from ore mines to shipping platform and with modern manufacturing facilities, we have unusual flexibility to meet any requirements on cold rolled sheets and strip. Quality control and physical specifications are no problem.

If your operation calls for cold rolled products of close uniformity and unvarying high quality, we would like to talk to you. Telephone the Youngstown District Sales Office near you or write the home office. The earlier we can discuss your requirements, the better we may be able to serve you in the coming months.

Youngstown

**COLD ROLLED
SHEETS
AND STRIP**

THE YOUNGSTOWN SHEET AND TUBE COMPANY

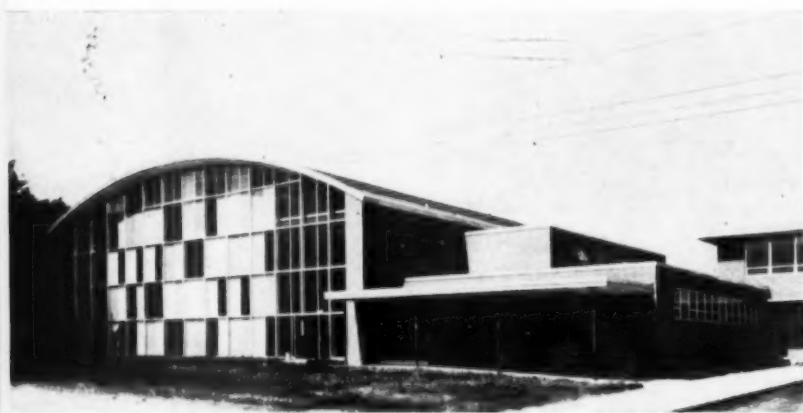
*Manufacturers of
Carbon, Alloy and Incoloy Steel*

General Offices Youngstown, Ohio District Sales Offices in Principal Cities.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - BLACK PLATE - RAILROAD TRACK SPIKES - MINE ROOF BOLTS



The new leader in Magic Chef's gas range line for 1956 is introduced by President Cecil M. Dunn (right) and sales executives, Kenneth O. Dupree, general sales manager (left) and Albert W. Gruer, Jr., gas range merchandise manager. This model, completely restyled by industrial designer Jack Morgan, has an oven with 7000 cubic inches capacity. The broiler automatically pulls forward as the door is opened.



Double-faced porcelain enameled panels serve in an unusual architectural treatment in the gymnasium of a Paoli, Pennsylvania high school. Supplied by Ingram-Richardson Manufacturing Company, many of the insulated panels serve as both exterior and interior wall surfaces.

The new 420,000 square foot San Fernando Valley Store of the May Company, in North Hollywood, California, has an exterior of architectural porcelain enamel. The recently-completed building has a total of 34,113 square feet of porcelain, including both porcelain on steel and porcelain on aluminum, all supplied by California Metal Enameling Company. On the exterior are 6350 square feet of smooth-faced panels laminated to 1 1/16" aircomb insulation.

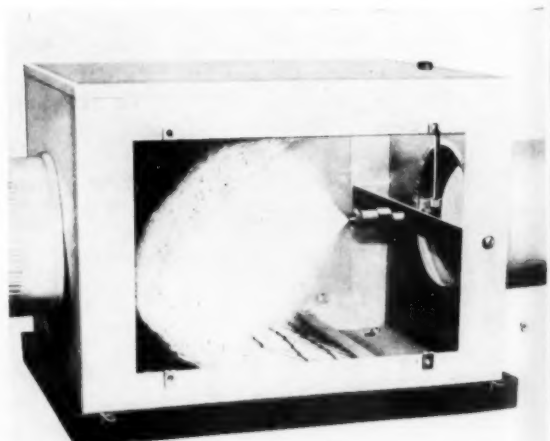


finish...

on the theory that one photo equals one
feature will bring you many photos and
metal products



Stainless steel receives top billing in a new line of sink tops introduced by Republic Steel Kitchens at the January Market in Chicago. In addition, Republic is offering custom sink tops of plastics bonded to either stainless steel or porcelain on pressed steel flat-rim sinks. The colors are red moonglo, yellow moonglo, green moonglo and gray pearl. Shown in the photo is a 66-inch twin-bowl stainless top as it appears on an undersink cabinet.



A new high-capacity spray humidifier just introduced by Lennox Industries, Inc., Marshalltown, Iowa, maintains humidity conditions in the home. It is a continuous-flow spray unit located in a bypass between the warm-air and return-air furnace plenums. Designed for attachment to any warm-air furnace, the humidifier adds up to eighteen gallons of water per day to the air.

... foto-news

s on thousand words, this new finish foto-news
s an few words about people and products in the
clud field



of sink
January
ing cus-
ess steel
e colors
glo and
in-bowl
cabinet.

Raytheon's new "T-150" which plays for four months normal use on a simple battery is displayed by Jo Hoppe, chosen "Miss Transistor" by executives of the television and radio operations of the Raytheon Manufacturing Company. The tiny, 22-ounce "T-150" is 1 $\frac{3}{4}$ inches thick, 6 $\frac{1}{8}$ inches long and 3 $\frac{1}{4}$ inches tall.



The new Toastmaster iron features extremely sensitive temperature control and "lowness" that enables it to "hug" the fabric and make "frilly" ironing easier. Made by the Toastmaster Products Division of the McGraw Electric Co., Elgin, Ill.



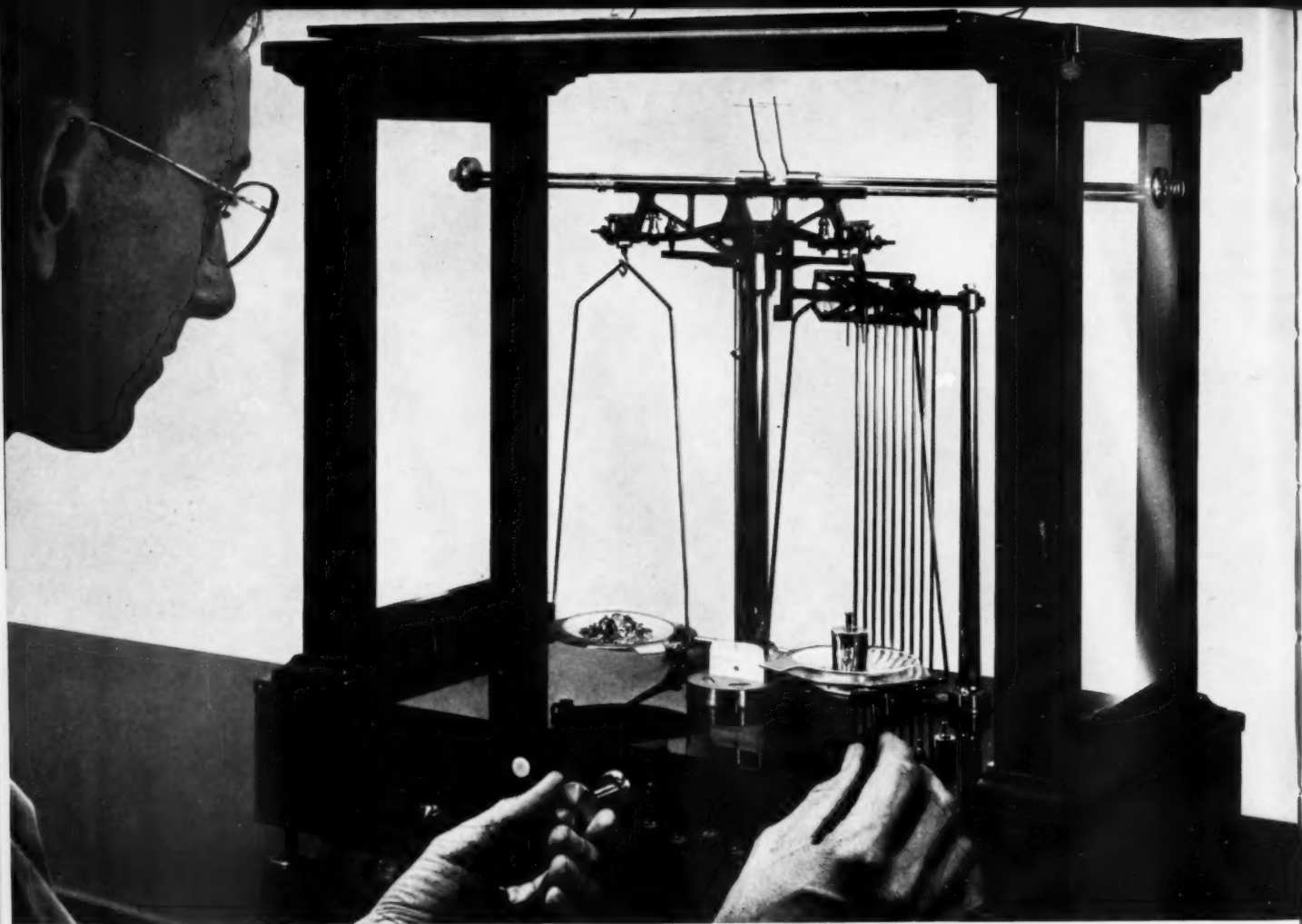
President of Reynolds Metals Co., R. S. Reynolds, Jr. (right) looks over work being done on permanent colors for aluminum for outdoor architectural uses. Samples are shown by research chemist Dr. E. R. Ramirez at the company's metallurgical research laboratory at Richmond, Va.



Major assembly line of the Maytag wringer washer showing the deluxe model in final assembly at Maytag's plant 1 in Newton, Iowa. Both this plant and the automatic washer and dryer plant are now in full swing replenishing dealers' stocks following a 67-day strike of the company's 3,000 workers.

The first 1956 Norge refrigerator models roll from the production line at the Muskegon Heights, Mich., plant. Refrigerator production will be at a record Norge high this year, about 50% ahead of 1955 output, say Norge officials. These are new "Tri-Levels" which have three separate food compartments. They also accommodate "custom caps" to provide color versatility.





How Great Lakes Steel *weighs* quality



IN A QUALITY CONTROL LABORATORY, chemical analyses, such as these, are run on every heat. Then . . .



THE ANALYSES are telautographed immediately to the melter so he can add elements to meet customer's requirements.

How much does quality weigh? In the photograph above, a test sample is being weighed for chemical determinations. Tests like this give our open-hearth operators a running check on molten steel while it is still in the furnace; enable them to pour heat after heat of high and uniform quality.

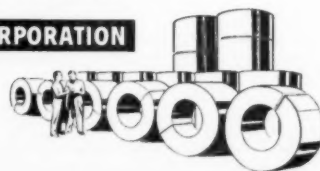
In every department at Great Lakes Steel, from raw material docks to delivery of finished steel, the emphasis is on quality—on seeing that customers receive steel that meets their particular requirements.

Do you have a manufacturing problem involving flat-rolled steel? A call to Great Lakes will make available to you the experience of our entire organization.

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A method for recovery of zinc plating solutions

economical recovery method eliminates stream pollution

RECOVERY of zinc plating solution by evaporation of rinse water, utilizing a method and equipment new in plating operations, has solved a stream pollution problem in the disposal of cyanides in waste material and is giving economies that will amortize the recovery equipment quickly, even when it is not operated continuously.

The new method is being used by Channel Master Corporation, Ellenville, N. Y., maker of television antennas, where some of the company's products and job lots of metal products of other manufacturers are being electroplated with zinc.

Equipment used to recover plating solution and supply distilled rinse water is a double-effect evaporator. Rated capacity of this evaporator is 750 lb. of water per hour when supplied with 100 gallons of rinse water per hour containing 1.85% solids.

Operation of the evaporators is simple and automatic. Circulation is maintained by thermal difference. Steam input to the evaporator is automatically regulated by a float type control operating on the solution level in the holding tank. Solution level in the separators automatically regulates the flow of waste rinse water into the evaporators, and the operating temperature is automatically maintained at any desired level.

Operating experience to date indicates a steam consumption of 90 lb. of 15-psi. steam per pound of sodium cyanide recovered. An ejector unit used with the evaporator requires an additional 50 lb. at 90-100 psi. About

500 gallons of cooling water at 60 degrees F. are required for each pound of sodium cyanide recovered. With steam at \$1 per 1000 lb. and cooling water at 7 cents per 1000 gallons, these costs add up to 18 cents per pound of sodium cyanide recovered. These figures cover the

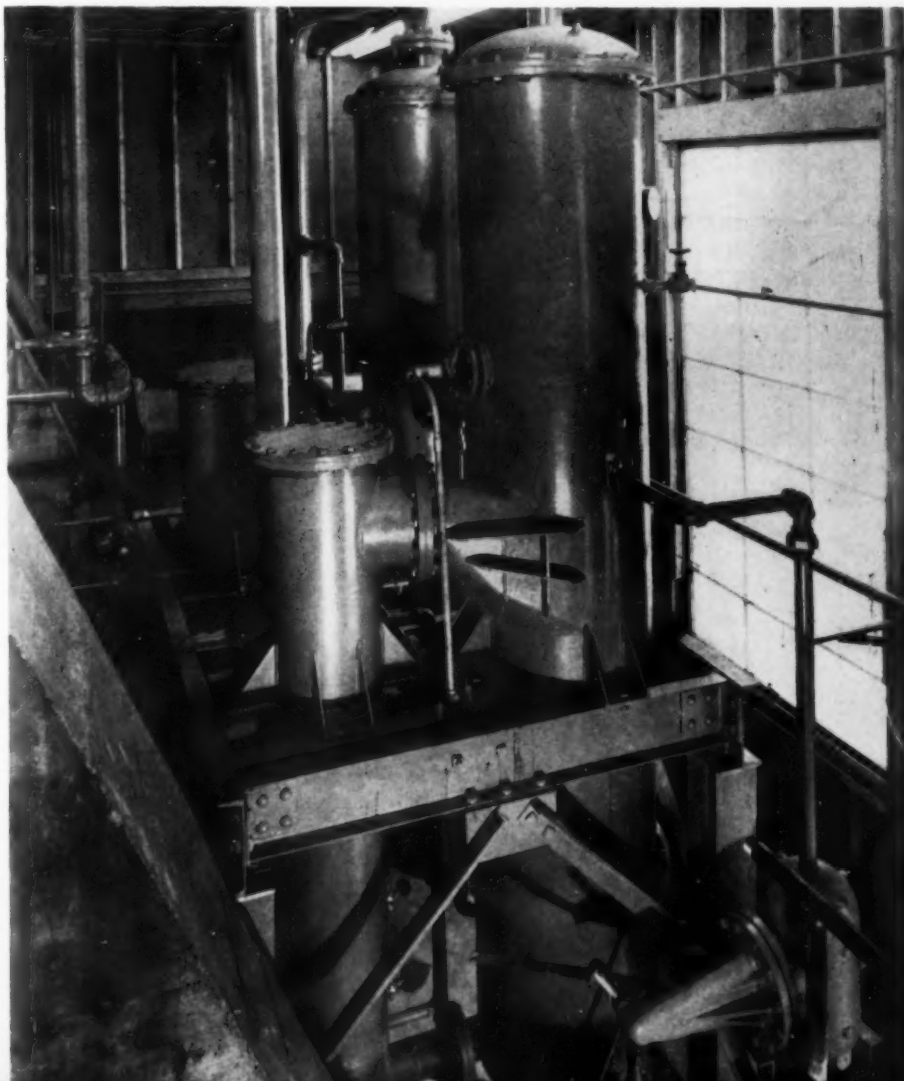
recovery of zinc cyanide and sodium hydroxide also. Total labor is less than one man-hour per 8-hour shift.

The recovery system is recovering the drag-out from about 11,000 gallons of zinc plating solution in the

to Page 81 →

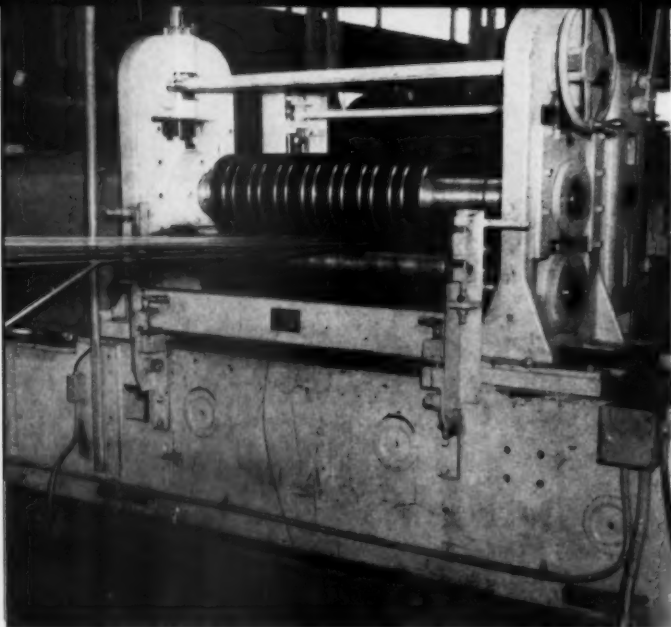
see flow diagram with continuation

Double-effect evaporator for recovery of zinc plating solution from waste rinse water solved a disposal problem for Channel Master Corporation, Ellenville, N.Y. First-effect evaporator and separator are in foreground. Liquid level flow controller is at lower right. Operation is almost fully automatic and requires only one man-hour per 8-hour shift.



Source for further information on the equipment and process may be obtained by writing to finish.

finish FEBRUARY • 1956

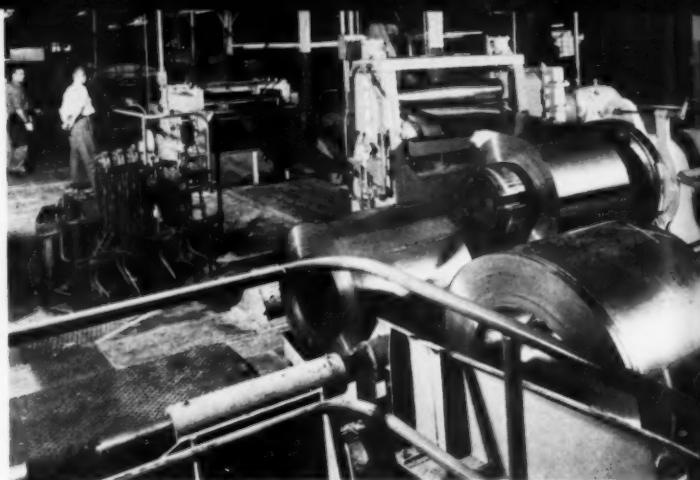


Closeup shows steel slitter knives and rubber strippers which strip the steel from the knives. Thirty-two knives are used for this 15-slit operation. Steel and plastic spacers are used, ranging from 4 inches to .0015 inch in thickness. Maximum width for slitter is 48 inches, and it can slit as many as 20 strips on 24-gauge steel down to 7 on 11-gauge.

A COIL steel slitting and flying shear line installed recently by American Kitchens Division of Avco Manufacturing Corporation in Connersville, Indiana, is slitting and cutting costs as well as steel.

Indications are that the equipment will effect a saving of about \$10.00 on each ton of coil steel used for fabricating automatic dishwashers, counter tops and accessories. The company uses about 14,000 tons of cold rolled steel a year in addition to 7,000 tons of enameling steel for its sinks. The latter is not yet available in coil stock, so sink production cannot utilize the new line.

Reduction in the number of buy sizes is expected to cut 1,000 tons from the steel inventory. Prior to installing the slitter-shear American Kitchens was buying 259 sizes of sheet steel to fabri-



While one coil is being run through flying shear, another sits beside it on hydraulic coil buggy ready to be fed onto uncoiler mandrel. Still another coil is on ramp. Panel board in left foreground controls shear ramp, hydraulic coil buggy and uncoiler. An electronic eye just beneath the loop of steel entering shear blade automatically controls amount of loop.

Slitting and shearing . . .

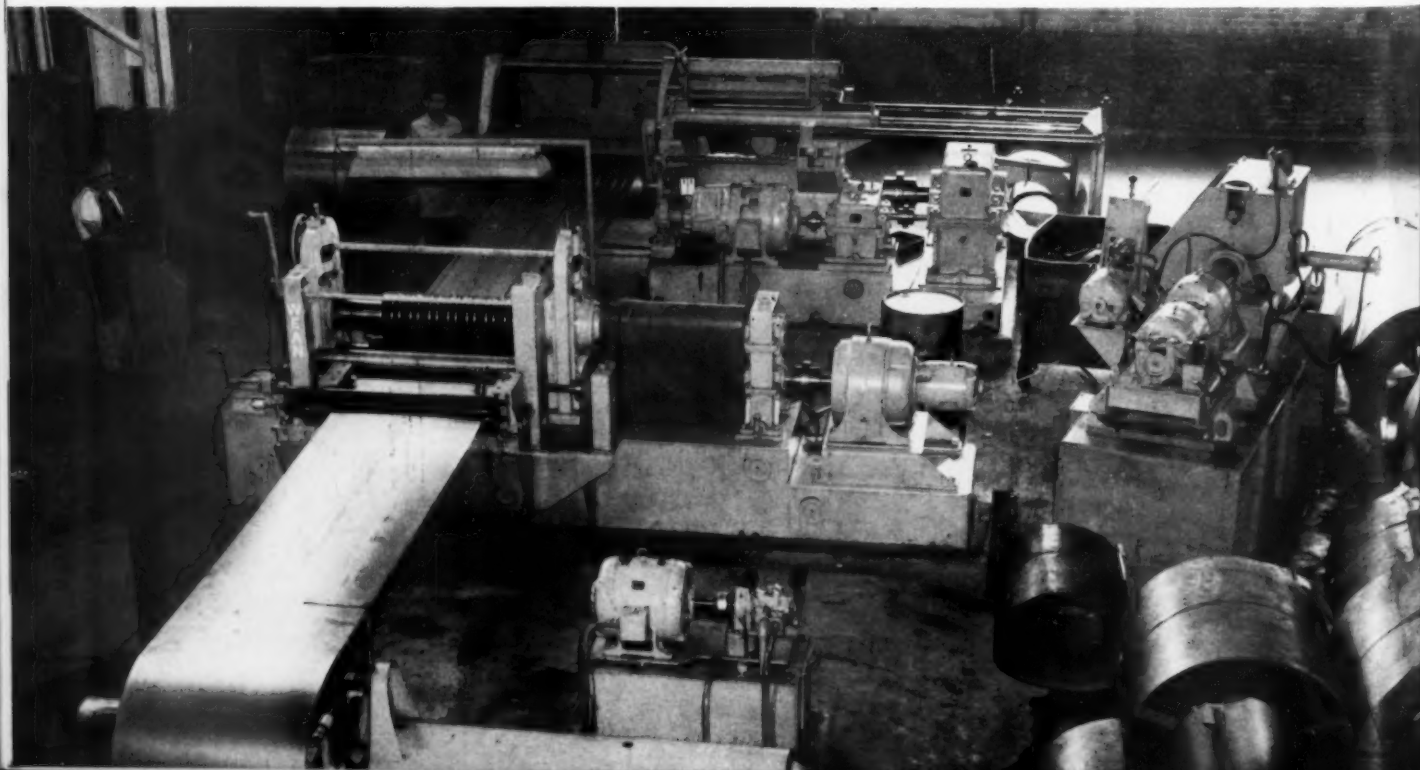
American Kitchens uses modern equipment

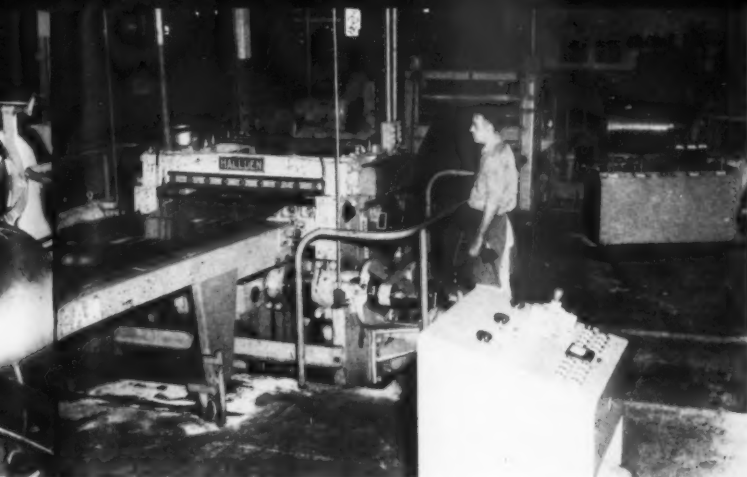
cate about 350 different piece parts. Now, only 63 buy sizes of coil steel do the same job.

Scrap loss has been reduced; materials handling and inventory are less, and there has been a considerable saving in mill extra cost.

The slitter can handle widths up to 48 inches, and with the ease and precision of the housewife's noodle slicer, it can slit as many as 20 strips simultaneously on .025 stock, or 7 strips on .125 stock. At low range it will handle 90 to 225 feet of steel a minute; at high range, from 225 to 500 feet.

Capacity of the shear is from 12-inch to 16-foot lengths, and





These panels being lopped off by the flying shear are 35½" wide and 27" long, 22 gauge steel. They're used for base cabinet end panels. Shear is handling 170 feet of steel a minute, or 77 pieces. In this operation, a standard of 1/32" tolerance is maintained. In foreground is control panel for entire shear line.

... steel — and costs

ent have production costs on 14,000 tons of steel

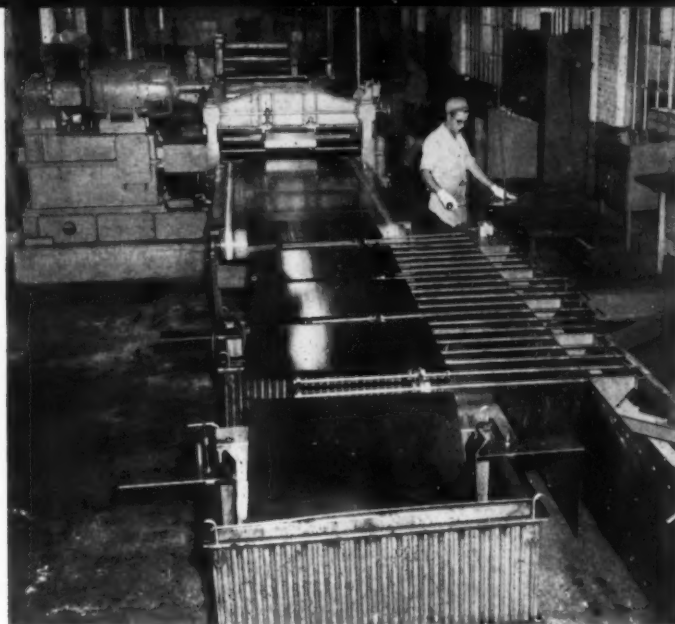
it can lop off 100 pieces or 200 feet of steel a minute. Panels for kitchen wall cabinets are the largest volume item for which the equipment is used. These panels run from 12 to 17-inch widths and 15 to 42-inch lengths.

Coils which average about 8,000 pounds are delivered to the steel storage room mainly by truck, where they are unloaded by overhead crane and stacked according to gauge. Between 3,500 and 4,000 tons of coil steel are kept in stock.

A coil is carried to the nearby slitter line by overhead crane, where it is set on the coil ramp for gravity feed onto a hydraulic coil buggy which positions it on the uncoiler mandrel. As strips

← This coil is being slit into 15 strips, each 2-33/64" wide, to be used for base cabinet channel sections. The 18-gauge strip starts at a speed of 225 feet a minute, and when coil reaches 50-inch outside diameter it travels 500 feet a minute. As the strips are slit each is automatically recoiled.

→ Cold-rolled steel coils surround the slitter line stacked according to gauge. Coils average about 8,000 pounds each, and total storage is kept around 4,000 tons. Coil is carried to head of slitter line by overhead crane, where it is set on ramp for gravity feed onto hydraulic buggy which positions it on uncoiler mandrel.



From the shearing process each piece passes through a leveler, then down the run-out table and into a stacker. There are two stackers at end of line. When one at extreme end is full, bars covering other stacker are pulled so pieces drop into it. Thus the line can be run without interruption. Man at right makes percentage check to maintain accuracy.

are slit they are automatically recoiled.

Scrap, too, is automatically rolled into 200-300-pound balls which are dumped hydraulically into steel tubs.

A rail "buggy" transports a slit coil to the shear ramp about 18 feet from the slitter line. When ready for the shear, the coil rolls onto a hydraulic coil buggy which positions it on the uncoiler mandrel at the head of the line.

After passing through the shear blade each piece goes through a leveler and moves down the run-out table to drop into a stacker. Two stackers stand at the end of the line, and when one is full the pieces drop into the other. Thus the shearing process is uninterrupted.



The outlook in the gas appliance field

gas fired products established all-time sales peaks during 1955 —
the nation's gas pipeline system will pass the 5,000,000 mile mark this year

by *Edward R. Martin* • DIRECTOR OF MARKETING AND STATISTICS, GAS APPLIANCE
MANUFACTURERS ASSOCIATION, NEW YORK CITY

FROM all indications 1956 will be a somewhat better year than was 1955. Many, if not most, of the individual industry and general economic polls and forecasts predict levels for 1956 which are in close proximity with last year's volumes.

It is an interesting note that many economists look for first half activities to continue the upward trends of 1955. The second half, however, presents a degree of uncertainty which has its roots in existing doubts that any economy can indefinitely be maintained at peak performance. In other words, a continuing rise in business activity is freely predicted up to the mid-year point — beyond that the predictions are not clear cut. In many quarters there exists a distinct feeling that the rising spiral will come to an abrupt halt and will be followed by a leveling off well below the anticipated first half achievements.

Because second half volumes are open to conjecture, it is difficult to ascertain

the degree of affect the first half's momentum will have on the year as a whole. But if "Gross National Product", the sum total of all goods and services produced, is used as a guide, 1956 shapes up as a year which will be in the neighborhood of 3% better than its predecessor. GNP is forecast at \$406 billion as compared with \$383 billion during 1955.

Gas appliance and equipment levels in 1956

These levels appear to be in tune with the general economy. The composite thinking of manufacturers of all types of gas appliances and equipment indicates an over-all increase of 2.5% from last year's unit volumes. Naturally, this is not a standard which can be adopted universally as each product group anticipates its 1956 volumes in line with its individual characteristics.

Table I presents the consensus, 1956, as compared with the data for 1955.

The data in Table I represents the

consensus of manufacturers on anticipated industry volumes. If individual companies all perform up to expectations, these percentage figures could be materially increased.

New peaks established in '55

One of the most interesting observations is that several gas fired products established all-time sales peaks during 1955. These include automatic water heaters, warm air furnaces, gas boilers and clothes dryers. Thus, the anticipated increases take on added significance and presage the establishment of new sales peaks during the coming year.

Thus, from the viewpoint of gas appliance and equipment manufacturers, in many quarters 1956 shapes up as a comfortable year when compared with 1955 volumes, and a spectacular year when compared with the sales of other post-war years.

Also of significant interest is the optimistic outlook of manufacturers of gas fired heating equipment. This optimism is provided body through the results of a recent American Gas Association survey which advises that gas utilities expect to add 1,200,000 new central and space house heating customers during the coming year. It is well within the gas industry's reach, during 1956, to surpass oil as the nation's number one central heating fuel.

Of the various types of gas heating equipment, only the floor furnace looks toward declining volumes. This is explained by noting the progressively improving sales performances of warm air furnaces and vented recessed wall heaters.

Clothes dryers get top billing

Gas fired clothes dryers reached a sales peak of 365,000 units in 1955.

to Page 24 →

Table I
Anticipated 1956 Industry Sales Compared with
Estimated 1955 Sales — Units

| | Consensus — 1956 Unit Shipments | Estimated — 1955 Unit Shipments * | Percent Change 1956 over 1955 |
|------------------------------|------------------------------------|--------------------------------------|----------------------------------|
| Domestic Gas Ranges ** | 2,289,000 | 2,277,000 | +0.5 |
| Auto. Gas Water Htrs. | 2,773,000 | 2,762,000 | +0.4 |
| Central Gas Htg. Equip. | | | |
| Warm Air Furnaces | 898,000 | 850,000 | +5.7 |
| Boilers | 108,000 | 91,000 | +18.7 |
| Conversion Burners | 218,600 | 210,000 | +4.1 |
| Total Central Heating | 1,224,600 | 1,151,000 | +6.4 |
| Vented Recessed Wall Heaters | 382,000 | 377,000 | +1.3 |
| Gas Floor Furnaces | 146,000 | 161,000 | -9.3 |
| Gas Direct Htg. Equip. | 1,545,000 | 1,470,000 | +5.1 |
| Gas Unit Heaters | xxx | xxx | +28.5 |
| Gas Incinerators | xxx | xxx | +39.7 |
| Gas Hotel & Rest. Equip. | xxx | xxx | +12.9 |
| Gas Clothes Dryers | | Insufficient Report Received | |

* Ten months actual, two months estimated

**Excluding Built-ins — see page

For further details see consensus reports on specific gas appliances and equipment.

The outlook for electrical appliances

electric major appliances and houseware shipments for 1955 a record \$4½ billion — appliance forecast for 1956 is for \$4.8 billion

by *J. W. Miller* • MANAGING DIRECTOR, AND *A. J. Nesti* • CHIEF STATISTICIAN,
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION, NEW YORK CITY

THE electric appliance industry enjoyed a record year in 1955 with shipments of major appliances and housewares amounting to \$4½ billion, thus surpassing 1954 shipments by 13% and the previous peak year of 1950 by nearly 7%.

During 1955, practically all appliances showed marked increases in sales with the most substantial gains over 1954 again being made by the relatively newer items: electric dryers increased 56%; food mixers, 45%; electric dishwashers, 37%; blenders, 37%; automatic and semi-automatic washing machines, 33%; food waste disposers, 30%; electric bed coverings, 29%; and dehumidifiers, 21%. However, the older appliances also had a very good year, in general, with 1955 sales of electric ranges increasing 19% over last year; electric storage water heaters, 13%; electric household refrigerators, 12%; and electric farm and home freezers, 11%.

The only decreases were slight dips in sales of broilers, ironers and roasters, and a more drastic drop of 17% in sales of electric fans.

Appliance forecast for 1956 —

4.8 billion

Electric appliance shipments are expected to amount to \$4.8 billion in 1956, or approximately 6% greater than the 1955 consumption.

Total shipments of the major appliances will increase from 5% to 30% during 1956 with food waste disposers and dishwashers leading with a gain of 30%, dehumidifiers, 15%, fans and water heaters, 10%, and electric housewares, freezers and refrigerators, 5%. Sales of electric ranges in 1956 are estimated to equal those of 1955.

Larger models in major appliances for 1956

The continuous trend of home construction during 1956, with more large size homes being built, will stimulate the need for larger models of ranges, freezers, refrigerators, water heaters and other products. Shipments of these appliances during 1955 show that the larger size models are still gaining in popularity. Sales of refrigerators, 9 cubic feet and over, were 32% greater in 1955 than in 1954 and accounted for 73% of the total sales in 1955 as compared to 28% in 1948 and 66% in 1954. Electric farm and home freezers shipments of the 13 cubic feet and over sizes were 12% greater in 1955 than in 1954. In 1947, the larger size freezers amounted to only 11% of the total shipments; by 1954 this had increased to 68% and by 1955 to 70%. Water heater shipments of the 55-gallon and over capacity increased 20% in 1955 over 1954 and they now account for 18% of the total yearly units sold. However, in the case of the electric ranges, the medium size ranges (22 to 32 inches) continue to increase in demand with a 31% increase in sales in 1955 over 1954, while the ranges "over 32 inches" had a 10% sales increase.

Industry forecast

The electrical manufacturing industry in 1956 expects to surpass the record-breaking output of 1955 by 7½%. Total dollar shipments amounted to \$17.4 billion in 1955 as compared with \$15.4 billion in 1954 and \$16.3 billion in 1953, the previous all-time high for the industry. In 1956, total industry output will reach \$18.7 billion.

Contributing heavily to the industry's

performance is the continuance of the sharply expanding use of electrical energy for all purposes — cooking, heating, lighting, entertainment, transportation, manufacturing, construction, etc. These expansions in the use of electrical energy have placed a heavy demand on the industry for all types of electrical equipment — generators, transformers, motors, controls, wire and cable, appliances, electronic components and hundreds of other electrical products.

Industrial products

Reflecting the expanding use of electrical energy in the industrial field, the industry in 1955 shipped \$2.2 billion-worth of such products as electric motors and control, electric welding equipment and wire, carbon products, industrial electron tubes and metallic rectifiers. In 1956, the output of these products is expected to increase 6% to \$2.4 billion.

The effects of building construction on the industry is demonstrated by the shipment of \$720 million of lighting equipment of all types and \$602 million of such products as rigid steel conduit, conduit fittings, low voltage fuses, switches, molded case breakers, panelboards and wiring devices. The 1956 output of these products combined is expected to rise 3% to \$1.36 billion.

Shipments of signalling and communication equipment increased from \$1.05 billion in 1954 to \$1.26 billion in 1955, and are expected to increase another 5% in 1956.

In specialized equipment, such as x-ray equipment, automatic temperature controls, specialty transformers, radio and television receiving tubes, electric lamps, and air conditioning and com-

... electrical appliance (from preceding page)

mercial refrigeration equipment, the industry shipped a total of \$4.5 billion in 1955, and expects to ship \$4.8 billion in 1956, an increase of 6%.

To generate, transmit and deliver the electrical energy required by all of the equipment described thus far, the industry had to produce \$1.7 billion of generating, transmission and distribution equipment, \$1.5 billion of electrical wire and cable, and \$340 million of insulating materials. The output of

all of these products is expected to increase 6% in 1956.

Through its record performance, the electrical manufacturing industry made a substantial contribution to the nation's general business prosperity in 1955. In 1956, the industry will undoubtedly make an even greater contribution and help to realize the general optimistic expectancy for new peaks in production, employment and earnings.

outlook ... gas appliance field (from Page 22)

There is no doubt this will become a "previous peak" at the end of this year. The clothes dryer represents the "baby" of the gas appliance family and will continue to be the recipient of industry-wide promotion and public acceptance.

Another fairly "new" gas appliance is the incinerator. Manufacturers of this product are most optimistic as to 1956 possibilities than are the manufacturers of any other gas burning product. The composite of industry thinking is that aggressive merchandising and increasing public acceptance will make it possible to overshadow last year's performance by almost forty percent.

New unit sales peaks are also anticipated by manufacturers of gas fired unit heaters and manufacturers of hotel and restaurant cooking equipment.

While domestic gas range manufac-

The aggressive and progressive sales performance of automatic gas water heaters has carried this branch of the industry to a point where "3,000,000 unit sales" years are a definite possibility. The year 1956 could be the first such year.

Utility and pipeline forecasts

Record gains are predicted for the utility and pipeline industry during the coming year. This forecast comes at the conclusion of 1955, the most successful year in the history of the industry.

As an example, at the end of 1955 the gas industry (utility and bottled) served approximately 37,000,000 customers. Of this number, 34,734,000 were residential customers — this is an increase of 1,347,000 residential customers over the 33,297,000 served at the end of 1954. The growth in the

ing the four years 1955 through 1958.

3. That the gas industry with some \$16 billion in gross assets will be well on the way towards becoming a \$20 billion industry.
4. Underground storage pools will be further developed, and \$50 million will be spent on such facilities during the coming year.

The gas utility industry alone is increasing at the rate of about a 1,000,000 new customers per year, and proved recoverable reserves of natural gas continue to rise despite the fact that each year's production establishes a new peak.

The potential market in both new and old homes, in industry and in commercial establishments, for our fuel and our appliances and equipment points towards new peaks.

Conclusion

The optimism accompanying our industry's approach to the coming year need not be limited to any twelve month period. True it is that our industry is subject to the economic gyrations of our nation's economy — but it is equally true that vast markets stretch before us into the future.

The gas industry has established a long-term record of achievement. It stands ready to project this record into the future. Engineering, design and performance improvements continue as the keynote throughout the gas appliance and equipment manufacturing industries.

In addition, our products and our fuel are backed by public relations programs, national advertising, promotions and sound tested merchandising programs. The gas industry is a co-operative industry and will continue its practice of close cooperation, particularly with manufacturer — utility — LP gas relationships throughout the coming year.

However, industry performance and the level it achieves are reliant on the performance and progressiveness of the companies which make up that industry. The gas and the gas appliance and equipment manufacturing industries are no exceptions. The future is in our hands — our progress is up to us.

Table II

| | Residential Customers | | | Percent Change 1955 over | |
|---------------|-----------------------|------------|------------|--------------------------|-------|
| | 1955 | 1954 | 1941 | 1954 | 1941 |
| Utility Gas | 26,894,900 | 25,947,000 | 17,501,000 | 3.7 | 53.7 |
| LP Gas (Est.) | 7,750,000 | 7,350,000 | 1,645,000 | 5.4 | 371.1 |
| TOTAL | 34,644,900 | 33,297,000 | 19,146,000 | 4.0 | 81.0 |

turers look for 1956 to be only slightly better than was last year, this thinking relates only to their "free-standing" models. "Built-In" gas ranges have hit the market with a tremendous impact, and during the coming year could carry over-all gas range sales to a point well above last year's volumes. Continued technological advancements being incorporated into the modern gas range are also a factor which must be given full consideration in attempting to forecast future volumes.

residential phase of the gas industry is evidenced by Table II.

Now, looking towards 1956, the gas utility and pipeline companies are certain that at the end of this year:

1. The nation's gas pipeline system will have passed the 500,000 mile mark.
2. New construction and expansion facilities will have involved the expenditures of \$1,205,000,000 in 1956 alone, and \$4.3 billion dur-

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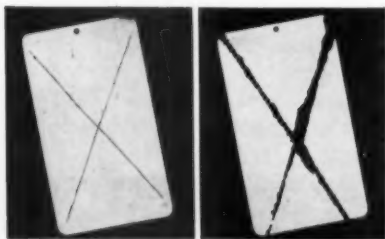


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Standard Glidden room air conditioner finish (left) withstood severe 400-hour salt spray test while competitive conditioner finish shows extreme pitting and eroding.

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Winter market is big success

color and built-ins play important role
in new major appliance lines

THE Winter Market in Chicago, which ran from January 9 through 20, proved to be highly successful. The manufacturers interviewed at both the Merchandise Mart and the American Furniture Mart indicated that their products have been well received. Not only were there a large number of buyers, but they were actively ordering merchandise.

Dr. George W. Mitchell, Vice President in Charge of Economic Research, The Federal Reserve Bank of Chicago, was the featured speaker at a luncheon at the American Furniture Mart on Monday, January 9. The title of his

General Electric "Roll-Out" freezer.



talk was "Economic Conditions and Business Prospects for 1956." Dr. Mitchell states that there "is no likelihood of a depression such as we had in 1929-30." He said that during the years since World War II, we have averaged a 4.1% gain each year. The living standard is up about 15%. During the past year he stated that there had been a 10% gain in production capacity and that the spendable income has grown some 17% since 1954.

A few of the highlights of the market appear on these pages. (**PM** represents Press Meeting, **FM**—Furniture Mart and **MM**—Merchandise Mart):

Servel—PM—Color-balanced interiors and the "automatic ice-server" will highlight the "1957" refrigerator line of Servel, Inc., which will reach retail markets this spring. Pastel shades against a light gray background are used in both the gas and electric models.

Among the features of 1957 Servel refrigerators will be increased food storage capacity and thicker, more spacious doors, which provide better insulation and improved performance.

Bright aluminum frames—or "bezels"—are available to adapt any Servel Refrigerator to a built-in installation.

Servel's new appliance line will also include five room air conditioner models

Rheem "X-56" Imperial Rheemglas automatic storage water heater.

and the portable Wonderbar refrigerette.

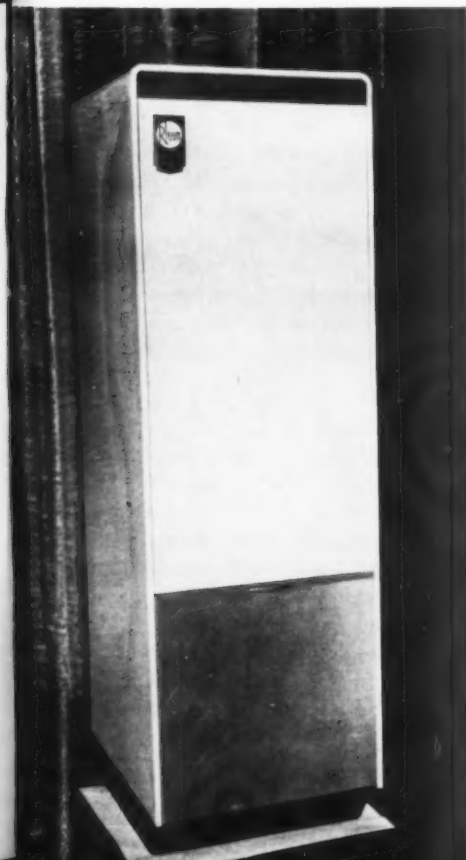
Mr. Donald Smith, Director of Advertising and Sales Promotion, told our editor "Servel is shooting for a 53% increase in 1956 over 1955. The company has already appropriated some \$350,000 for national advertising to help reach its sales goal."

Easy—PM—Easy Division of Murray Corporation introduces new washer-dryer combination. The new Easy unit combines the functions of a full sized washer and a full sized dryer in a single 27-inch wide cabinet, making it an extremely compact combination.

According to T. W. Hardy, Murray vice-president, it has an entirely new principle of tub rotation and positioning which does away with shock absorbers and bulky transmissions and permitting use of a full sized tub. The gearless driving principle of this new washer-dryer also makes for extremely quiet, vibration-free operation.

According to the manufacturer, the new Combination Washer-Dryer is said to choose the minimum amount of water needed for a wash, according to the size and type of load. The unit also automatically determines correct drying time for any type of load and shuts off automatically only when clothes are dry.

According to Mr. Hardy, the Easy combination's "low-heat hi-airflow" drying cycle also represents a departure from conventional methods. He said





Mrs. Dana Chase and Mrs. R. A. Lawson inspect a dramatic demonstration of the latest all-porcelain Hotpoint automatic washer, which hangs in a curtain of water.



Designer Melanie Kahane poses for finish photographer in one of attractive Confection Color Kitchens which she designed for the Westinghouse display at the Market.

that 200 cubic feet of air per minute are circulated through the clothes. Instead of increasing drying temperatures, Easy uses moderate heat circulated at twice the velocity of most dryers to speed up the drying process.

One pushbutton setting puts the machine into operation. This setting also automatically selects the drying time. There is no other timer to set. A control can also be set to stop the machine at any desired point in the laundering cycle so that clothes can be washed, rinsed, damp-dried or fluff-dried.

This unit is also available in an under-counter model.

Rheem — PM — The Rheem Manufacturing Company previewed its entire line of appliances on January 11 in Chicago. Their new gas ranges, gas and electric water heaters, heating equipment, air conditioning equipment and gas dryer for 1956 were presented.

The new Wedgewood Range will be offered in three colors — white, pink and yellow. It was pointed out that one model of the Wedgewood Range line incorporates a new rotisserie.

The Rheem Year 'Rounder is a combination central heating and air conditioning unit. It uses the zone cooling principle. A thermostat control can be timed so that the damper will send varying amounts of cool air to various rooms in the home. During the day, for example, the kitchen and living room areas may be cooled with only about

10% lead-off sent into the bedroom area. During the evening, the reverse procedure may be used.

The newest appliance on display was the Rheem "X-56" Imperial Rheemglas Automatic Storage Water Heater. This new product will be available for distribution on or about April 1. In addition to the color offered on the "X-56" model, Rheem offers color on its complete line of water heaters at no extra charge.

Amana — PM — A built-in refrigerator and a built-in freezer of identical sizes which can be installed at any height and at the position best suited to meet the work and styling requirements of any kitchen, were introduced by Amana Refrigeration, Inc., at the International Home Furnishings Market.

The "twin" built-in appliances may be placed side by side, one over the other, or independently at different points in a kitchen.

The matching units can be installed flush with kitchen cabinets or walls. In addition, the compact units are completely finished on all sides so they can be installed at the edge of a row of cabinets, or hanging above a sink, or flanked by cabinets or walls on both sides, or under a kitchen counter.

The matched built-in units have identical outside dimensions (33" wide x 34.5" high x 23.5" deep) and each has a food storage capacity of approximately seven cubic feet. The built-in freezer holds 234 pounds of frozen food.

Westinghouse — PM — the latest word in dream kitchens, available this year, incorporating many revolutionary color and design ideas and called Westinghouse Confection Color Kitchens were unveiled at the opening of the Winter Furniture Market by Westinghouse Electric Corporation.

The Confection Color Kitchens were designed by Melanie Kahane and highlight the use of 1956 Westinghouse built-in and free-standing appliances demonstrating the application of colored appliances in the kitchen.

According to R. J. Sargent, manager of the major appliance division for Westinghouse, the kitchens are "dream kitchens" not for tomorrow but for use today. "Although these kitchens are advanced in design and styling, they are not kitchens of the future — they can be enjoyed by the homemaker of today," he said. "Every design concept, every idea and each detail of the kitchens is practical for use today."

General Electric — MM — A new, automatic defrosting 5-cubic-foot food freezer, which takes up no more space than a standard kitchen base cabinet and which can be installed under the counter or placed free-standing anywhere in the kitchen has been announced by G.E. The cabinet-like unit holds 173 lbs. of frozen food and is 30½ inches wide, 24¾ inches deep and 34¾ inches high. This new freezer features automatic defrosting and a temperature control with



Lee Milligan, Flint, Mich., distributor, looks over the thermostatically-controlled center burner of the Florence Governess, as A. L. Johnson, Jr., special product sales manager of Florence points to the advantages of the newest built-in features.

finishphotos



Edith Ramsay of The American Home inspects a new Amana combination freezer-refrigerator "built-in". The model built into a brick wall has copper-colored doors and stainless steel trim. The gentleman is Merlin Morris, Amana advertising manager.

nine cold positions. It has four mini-cube ice trays.

The General Electric "Roll-Out" Freezer is available in any of the General Electric Mix-or-Match colors—Canary Yellow, Turquoise Green, Petal Pink, Cadet Blue, Woodtone Brown—or White. The interior is finished in turquoise with matching breaker strips, copper anodized aluminum shelf and a new sure-seal gasket filled with glass fibers. No handles or latches protrude from the unit; the controls are concealed behind a fold-down cover panel above the "Roll-Out" drawer.

Suburban Line — MM — The Samuel Stamping & Enameling Company, Chattanooga, Tennessee, showed its new line of Suburban electric and gas built-in ranges. They're offering a choice of stainless steel or any one of seven porcelain "decorator" finishes. These seven are white, arbor green, sunrise yellow, tuxedo black, winfield gray, alpine blue and copper-tan. Company officials are looking forward to another excellent year in 1956 with a good deal of their production going to the builder field.

O. A. Sutton — FM — A dazzling array of decorator colors combined with new low prices highlight the Vornado air circulator line of the O. A. Sutton Corporation this year.

Color combinations of mist grey, mint blue and coral rose have been added

to some Vornado air circulator models. These Vornado air circulators have bases in rich charcoal. Other models are finished in mist grey and charcoal bases.

Arvin Industries — FM — Five all-metal ironing tables representing the most extensive line Arvin Industries has ever marketed were introduced. Features of Lady Arvin Models include infinite height adjustment between 22" and 36" and spacious knee and leg room for "sit-down" ironing at the lower levels. Finger-tip adjustability, without slots, holes, stopping pins or catches, is a major feature. There is a safety lock to prevent accidental closing. The table stands firm on non-skid rubber feet and can be folded flat for easy storage. They are turquoise blue with chrome plated legs and feet.

The company also introduced new dinette and outdoor metal furniture lines.

Roper — FM — New performance features and fashion inspired styling highlight a complete new line of Roper gas ranges both "free-standing" and "arRANGEable" built-in gas cooking units.

"Tem-Trol," Roper's automatic controlled-heat top burner is the outstanding new cooking feature. Thermostatically controlled, it makes any ordinary utensil fully automatic. Foods won't burn or boil over. Utensils won't scorch.

Sun-Tone, Roper's metallic copper-colored trim, is used extensively.

Cy Edwards, Director of Merchandising, stated "The demand for color in built-ins will increase appreciably this year. We at Roper expect 1956 to be a good year and look for an increase of 20% over 1955 in our own sales."

Hotpoint — MM — A completely new "modular" kitchen with five automatic electric appliances built under a continuous stainless steel countertop has been introduced by Hotpoint Co. for 1956. New unit requires only nine feet of wall space and is designed for new homes or remodeled kitchens. Built-in appliances include automatic electric dishwasher, food waste disposall, plug-in griddle, four electric surface cooking units with pushbutton controls, oversize electric oven with plug-in rotisserie and a smaller companion oven.

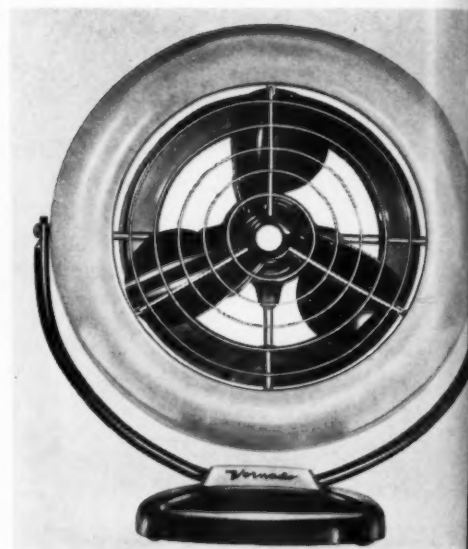
Dwight R. Anneaux, director of apartment house and builder sales for Hotpoint Co., tells us that builders are taking more and more interest in colored appliances. It appeals to them particularly from the standpoint of promotion. Anneaux says that, during the last three months especially, there has been a strong upsurge in the color interest and that this is indicated in bids for new building projects.

Hotpoint is offering five colors, white and stainless steel on major items.



←
*Servel Eldorado
room air condi-
tioner.*

→
*New Vornado air
circulator by O. A.
Sutton.*



Caloric — FM — Harold Tiley, General Sales Manager, Caloric Appliance Corporation, stated that "We're very optimistic regarding 1956 on all of our products. In 1955 we had our biggest year on dryers and expect 1956 to be an even greater year." Caloric's new range features the Thermo-set burner. This thermostatically controlled burner is offered on all their ranges, including the built-ins. They're offering seven dif-

ferent colors on ranges. The built-ins incorporate surface tops and door panels which can be removed and replaced with new ones of a different color. This enables milady to change the color of her appliances to correspond with a change in interior decoration.

Dr. Mitchell said that the Federal and State Governments will spend more during 1956 and that so long as the consumer demand remains strong, '56

should be another excellent year.

Look for a feature article on Caloric's Topton, Pa. plant in March *finish*.

Troy Sunshade — FM — The gold-anodized aluminum frames that headlined news of outdoor furniture a market ago have been presented in new versions by The Troy Sunshade Company for the current market.

To complete the outdoor grouping of pieces with gold-toned frames Troy has added a line of chairs, settees and sofas combining gold anodized aluminum with upholstery.

Features of this all-new 1956 Frigidaire Kitchen of Tomorrow are a range that cooks without getting hot, a refrigerator that can be loaded by the deliveryman outside the house, a magic recipe maker and ultrasonic dishwasher. Planning desk has new devices including a TV telephone, built-in vanity and telescriber. Built-in home laundry at left is equipped with a device that helps homemaker sort dirty clothes, then loads and activates the washer, automatically. (Newest innovation from Frigidaire is a marble counter top on which surface cooking is done. It is said that induction units below can boil water in a few seconds without heating the marble.)



Harley Weatherly, sales manager, Chattanooga Royal Company, Chattanooga, Tennessee, showing the new Crown Jewel Barbecue Brazier. This is one of the larger models of complete line of portable barbecue grills.



New Cincinnati Flo-coater automatically paints fan parts, wheels, housings and assemblies at NuTone, Inc., Cincinnati, Ohio. Unit conserves paint formerly lost, boosts production speed.

Huge Cincinnati gas-fired baking oven at NuTone, Inc., is roof-mounted, frees valuable plant floor space for assembly and other operations. Painted parts are automatically conveyed through 15 minute baking cycle.

**SAVES \$900
A WEEK**

...new Cincinnati Finishing System at *NuTone*

This automatic painting and baking system, designed by CINCINNATI for NuTone, Inc., world-famous manufacturer of door chimes, ventilating fans and kitchen hoods, has increased production, sharply slashed finishing costs and doubled capacity per square foot area.

The former method used by NuTone, to spray parts and assemblies for their products, consumed large quantities of paint. With the new CINCINNATI system, paint consumption is reduced to from 35 to 50% of what was formerly required.

Add to this a substantial increase in production, and you realize the unbelievably higher efficiency NuTone has achieved, while saving more than \$900 per week!

Take a look at your finishing costs. Better yet, have a CINCINNATI Cleaning and Finishing engineer take a look at them. He'll give you a no obligation analysis that can point to real savings for you. Write today!

OPERATION CYCLE

1. Loading
2. Flo-coating
3. Excess paint runoff
4. Baking
5. Touch-up
6. Unloading

Conveyor speed 10 ft. per minute
Baking temperature 280°F.

CINCINNATI designs, manufactures and installs complete cleaning, finishing and baking systems, custom-built for your requirements.

Cincinnati

THE CINCINNATI CLEANING AND FINISHING MACHINERY COMPANY

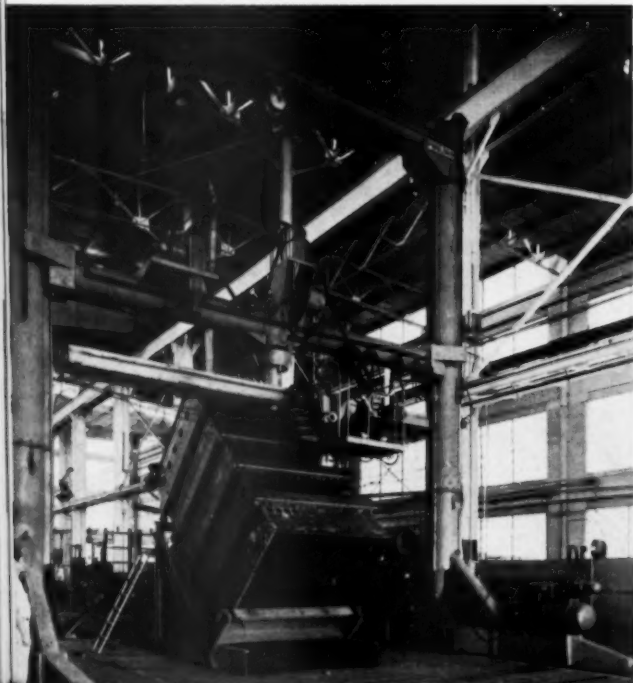
2004 HAGEMAN STREET

SHARONVILLE, OHIO, U. S. A.



A technician looks at the punched tape which feeds data from a blueprint for a jet aircraft fuel system part to the electronic control section of a machine that will produce the part. Designed by engineers of Bendix Aviation Corp. to meet a problem in jet engine production, the machine includes servo-mechanisms linking the electronic control to a cutting tool. The control unit interpolates the coded data and transmits it to the tool, checking it constantly for error as the three-dimensional part is machined.

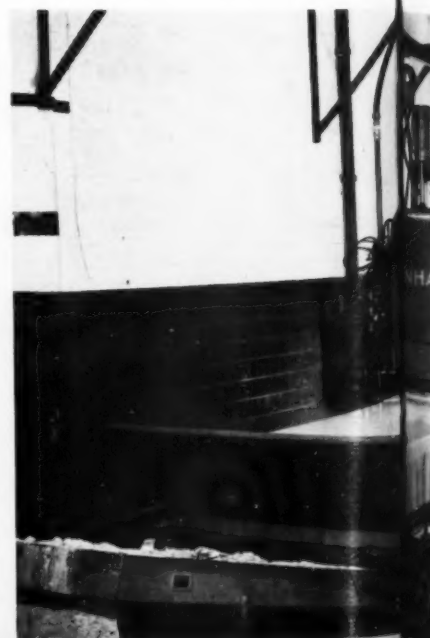
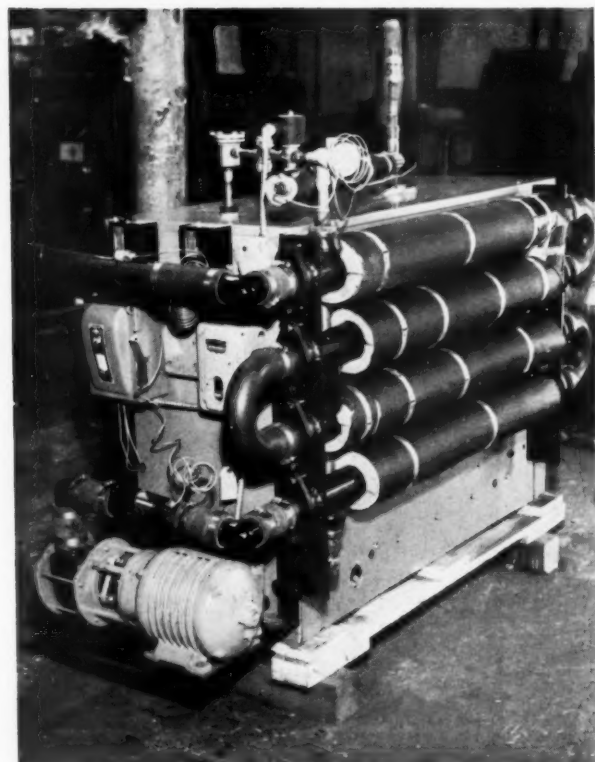
→
Illustrated is a complete refrigeration unit for cooling sulphuric acid anodizing solution and for similar solution cooling jobs. Materials of construction include Karbate, plastics, steel and stainless to provide a complete pump and exchanger unit of materials to resist attack by any solution. Unit can be furnished complete with necessary controls to hold solutions at any desired temperature.



←
This self-propelled gantry welder was engineered and built for Wagner Electric Company of St. Louis, Mo. The gantry travels to job location and welds seams, top rings, brace bars and bases in the fabrication of transformer tanks. The gantry stands 30 feet high and is 38 feet wide at the base. The machine is controlled from one central push button operator's station mounted on the variable speed welding carriage. The welding head can be positioned vertically and horizontally, and can weld a 20 ft. long uninterrupted weld in any segment of a 20 ft. diameter circle without movement of the travelling gantry, which is self-propelled on rails running the length of the shop floor.

finish ...

selected photographs showing equipment per
the manufacturer fabri



... foto-news

men operations, and processes of interest to
er fabricated metal products



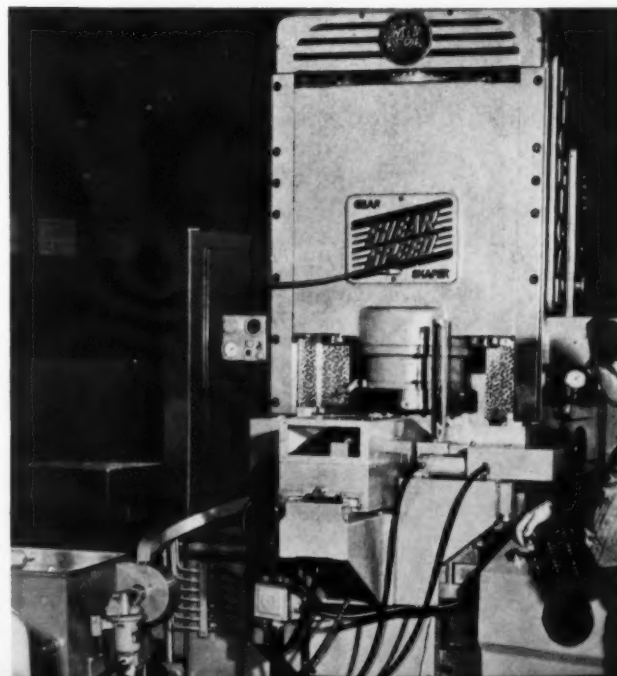
To avoid chipping, rust and water leaks at points where porcelain enamel signs are attached to pumps, Gulf Oil Company has replaced more than a million fasteners, using a new medium for attachment. The new fastener is made of 18-8 stainless and has a head which completely covers a pre-assembled neoprene washer. Practical result of this combination: Rust marks eliminated, washer cushions bolt-head to prevent damage and eliminate need for eyelets.

←
New hand-held optical comparator introduced by Bausch & Lomb Optical Co. provides a quick means for checking surface roughness. Operator holds work to be examined up to the instrument. A standard surface roughness scale has been inserted at the end of instrument. User sees both surfaces in circular field by view under 10 power magnification, as shown by insert. Comparator uses an illuminating system that emphasizes surface irregularities.



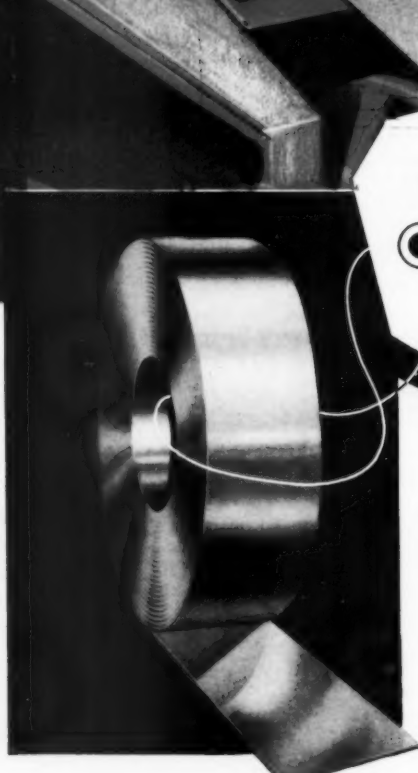
→
This series 1800 shear-speed gear shaper affords completely automatic operation. Gears are fed from the magazine loader visible at front center. Finished gears are gravity fed to the washer at left and then to a 3-way classifier. Operator is at control panel that holds parts to size and stops machine when tools begin to dull.

←
Largest capacity surface grinder in the world using an 88 inch wide abrasive belt to taper aluminum aircraft skins at the Coated Abrasives Division of The Carborundum Company.





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FOLLANSBEE has been able to maintain its reputation for quality strip steel only by strict control through every phase of production. The steel for your order is yours from the moment Follansbee mill operators begin to fashion it to your specifications.

Your Follansbee representative, knowing that the plant will always deliver a quality order, concentrates on being of service to you. Why not get in touch with him before you place your next order for strip steel.

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STEEL CORPORATION



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AHLMA 40th Anniversary meeting

American Home Laundry Manufacturers' Association celebrates its 40th year in an annual meeting at the Palmer House, Chicago

IN celebration of its 40th birthday, the American Home Laundry Manufacturers' Association held its annual meeting at the Palmer House, Chicago, on Saturday, January 7. There was excellent attendance of both regular and associate members for the all-day business meeting, followed by an evening of dinner, entertainment and dancing, participated in by both members and their wives.

B. J. Hank heads officers' slate

AHLMA officers elected for the new year include:

President — B. J. Hank, president, Conlon-Moore Corporation (formerly treasurer of AHLMA)

1st Vice Pres. — Elisha Gray II, president, Whirlpool-Seeger Corp.

2nd Vice Pres. — R. G. Halvorsen, exec. vice pres., Hamilton Mfg.

3rd Vice Pres. — H. B. Miller, gen. mgr., home laundry dept., General Electric Co.

Treasurer — Parker H. Ericksen, exec. vice pres., Bendix Division, Avco Mfg. Corp.

Asst. Treasurer — A. E. Cascino, Bendix Division, Avco Mfg. Corp.

Color and built-ins for the laundry, too

In a talk, "Home Laundry's Challenge in the Coming Decade," Edith Ramsay of *American Home* said, "Let's copy the automobile manufacturers" — who have used color so effectively in the development of a mass market. We should also build more safety into appliances. The suggestion is that major appliance manufacturers anticipate the safety requirements prior to legislation if at all possible.

Built-in equipment is on the move. With 47 range manufacturers now offering "built-ins." Washing machines and dryers can and should be put within easy use for the homemaker.

Mrs. Ramsay pointed up the fact that

there are 40 remodelings for each first start on a new home. Therefore, while the new home market is extremely important, no one should overlook the much larger market for home remodeling. Manufacturers should also recognize the potent influence of 20 million "working housewives." This speaker



PRESIDENT HANK

suggested the possibility that the modern home of the future may have more than one laundry unit. If such a premise were successfully developed, it could easily revolutionize the "saturation" picture.

Steel picture may change in three or four months

Robert M. Buddington, general sales manager of Inland Steel Company, presented a current report on the sheet steel situation as related to major home appliances. Buddington feels that the pressure on plate, structurals, etc., will cover a period of at least six or eight months. He pointed to the automobile market as the influencing factor on sheet steel as used in the appliance industry, with eight million cars produced in '55 and an estimated seven million for '56. Buddington gave his personal prediction as 6,500,000 cars for '56. He

said that, based on this estimate, there *might* be a slight easing on sheets in three to four months.

The speaker estimated that there will be 30 million tons of new steel capacity added in the next ten years but called the attention of laundry men to the fact that it takes three tons of steel in buildings and equipment to make a ten-ton expansion in production.

What about enameling iron?

The question raised by Buddington was "Will enameling iron constitute a major market for the future?" He called attention to the fact that a continuous normalizer for enameling iron costs a producer nine million dollars. (*There was no indication that this would be a stumbling-block to enameling iron production if it represented a major future market.*) The speaker expressed the view-point that, with new improvements coming along in finishes, cold rolled steel may prove to be entirely adequate and enameling iron may not be needed.

The following comments were taken from the summary remarks by speaker Buddington and represent his *personal* opinions:

Steel is going to remain "reasonably tight" for the first six months with plate and structurals *real* tight—with the situation open to question after June.

He does not look for "significant" price changes prior to July, with the future depending on wage adjustments and other factors affecting costs.

He does not feel that the year 1956 "will be quite as good" as 1955.

Dryers pass the magic million

A report for the Dryer Division Committee, prepared by Committee Chairman E. J. Sorensen, Hotpoint Co., was presented by C. H. Rippe, Jr., Hamilton Manufacturing Company. In the opening remarks of the report, reference was made to a comment by Ray Halvorsen (former chairman of the Committee)



J. B. Murray
Speed Queen

R. H. Smith
Frigidaire

Rolph Spang
Hotpoint

V. F. Petersen
Norge

R. M. Gottlieb
Ironrite



H. L. Travis
Kelvinator

W. R. Dabney
Ironrite

R. G. Halvorsen
Hamilton

L. C. Conner
Kohler

finishfotos

just a year ago when he said, "Last year ('54) the industry sold five dryers for every four sold in 1953. If in the coming year (1955) we score only one-half of this percentage gain, we will hit the *magic million mark*!" In presenting the current report, Rippe stated that, not only did the industry sell the magic million dryers for 1955, but sales were over 1,300,000 units, representing a 55 per cent increase for '55 over 1954. He pointed out that nearly as many dryers were sold in 1955 as the combined sales of this product for the *first seven years* that the dryer was on the market—the years, 1946-52.

The saturation point for dryers is indicated as 10 per cent. Said Rippe, "Let's not think of this as 10 per cent saturation, but rather as a 90 per cent sales potential ahead. Nine out of ten of today's families are potential and actual dryer prospects!" This Committee report states the belief that there is an attainable 1,700,000 or 1,800,000 as a realistic unit sales figure for dryers in 1956.

5.5 million washers by 1960

Jack D. Lee, chairman of the Washer Division Committee and manager, laundry equipment department, Westinghouse Electric Corporation, suggests that, in the light of predictions by market research experts, by 1960 the industry will be selling nearly 4,500,000 washers and, with the most optimistic estimate of 5,500,000 washers that year, it is the belief of the Committee chairman that by 1960 the industry will surpass the 5.5 million mark.

Lee referred to the relationship between wringer and spinner washers and automatic and semi-automatic models. In 1948, only 17 per cent of all washers sold were automatic and semi-automatic. In 1955, 73 per cent of all washers sold were in that category, and this, he said, should increase to 87 per cent by 1960. "Does this spell doom of the wringer washer in modern America?" Quite to the contrary, Lee believes, even though wringer and spinner sales will gradually

decrease year by year. In 1960 it is expected that the industry will produce and sell 725,000 of these units. According to Lee, the expected growth *will not* be automatic. Expansion in production alone is not enough. Attention must be given to (1) styling, (2) color, (3) built-ins.

Within the next few years, it will be practical to have two sets of home laundry equipment, including one for the bedroom and bathroom areas. It will be up to manufacturers to plan for this type of equipment and for the space requirements.

Forward march for ironers

Joseph Groshans, chairman of the Ironer Division Committee and general sales manager of the Ironer Division of Speed Queen Corporation, reported work of the Committee that has assured the manufacturers that ironers can be sold in greater volume and at a satisfactory profit with the backing of proper selling and promotion campaigns. In referring to the "plague" of excise taxes, he said, "Excise taxes continue to plague the forward march of ironers. I cannot understand why the lawmakers of our nation continue to keep the yoke around an industry that is struggling desperately to make a comeback from the biggest setback suffered in their entire history . . ."

Standardization of industry terms

Roy A. Bradt, vice president - marketing, Maytag Company, presented a list of recommended terms for use by the manufacturing companies in their advertising and sales work and for all similar uses. The definitions included those for automatic washer, semi-automatic washer, wringer washer, spinner washer, automatic dryer and combination automatic washer-dryer. It was suggested in this report that the industry should *not* use terms, "fully automatic" and "conventional." The report presented by Bradt was prepared by J. A. Hurley, vice president, Whirlpool-Seeger Corp.

Other reports in the business program

included the following: "AHLMA's Associates," by John A. Kovas, Dole Valve Company; "Industry Labor Policy," by William D. Fowler, Whirlpool-Seeger Corporation; "Expansion of Trade Statistics," by W. W. Grant, Westinghouse Electric Corporation; "The Export Picture," by S. H. Lewis, Easy Division, Murray Corporation; "New Underwriters' Standards," by David Hays, AHLMA engineering consultant; "Results by the Traffic Committee," by J. A. Illes, Norge Division, Borg-Warner Corporation; and "The Problems of Service," by S. Robert Payne, The Maytag Company.

Other important reports to the industry included an outline of the industry's accomplishment by retiring President Reeve; a report on Association





C. Con Kohler *B. Miller Electric* *J. M. Ranum Whirlpool-Seeger* *Guenther Baumgart AHLMA* *R. A. Bradt Maytag* *P. H. Ericksen Bendix* *Joseph Groshans Speed Queen* *G. P. Lamb Counsel* *J. D. Lee Westinghouse* *Harold Leisey Beam*

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activities by Executive Director Baumgart; a financial report by Treasurer Hank (incoming president); some advice from Association General Counsel Lamb; and a report on the 9th Home Laundry Conference by Ray Halvorsen. These were followed by nomination and election of a slate prepared by the nominating committee headed by W. R. Dabney.

Life begins at 40

W. Homer Reeve, retiring president, voiced predictions for a fruitful five years ahead, indicating the steady rise of 22 per cent from 1955 sales base to 1960 levels, with more optimistic forecasters expecting a 53 per cent increase in total sales from 1955 to 1960. This would indicate the truth in the state-

Note: Since our editors had the privilege of listening to Mr. Budington express his personal views regarding the steel industry (see Page 35), there has been considerable action in the automotive circles. It has been reported that one of the big three car producers has already sliced its March steel orders 30%. Other automotive producers are expected to make similar cuts. Everyone is watching the situation closely, but at the present time it is expected that other users, particularly the appliance industry, will take up the steel made available as a result of the automotive cut-back.

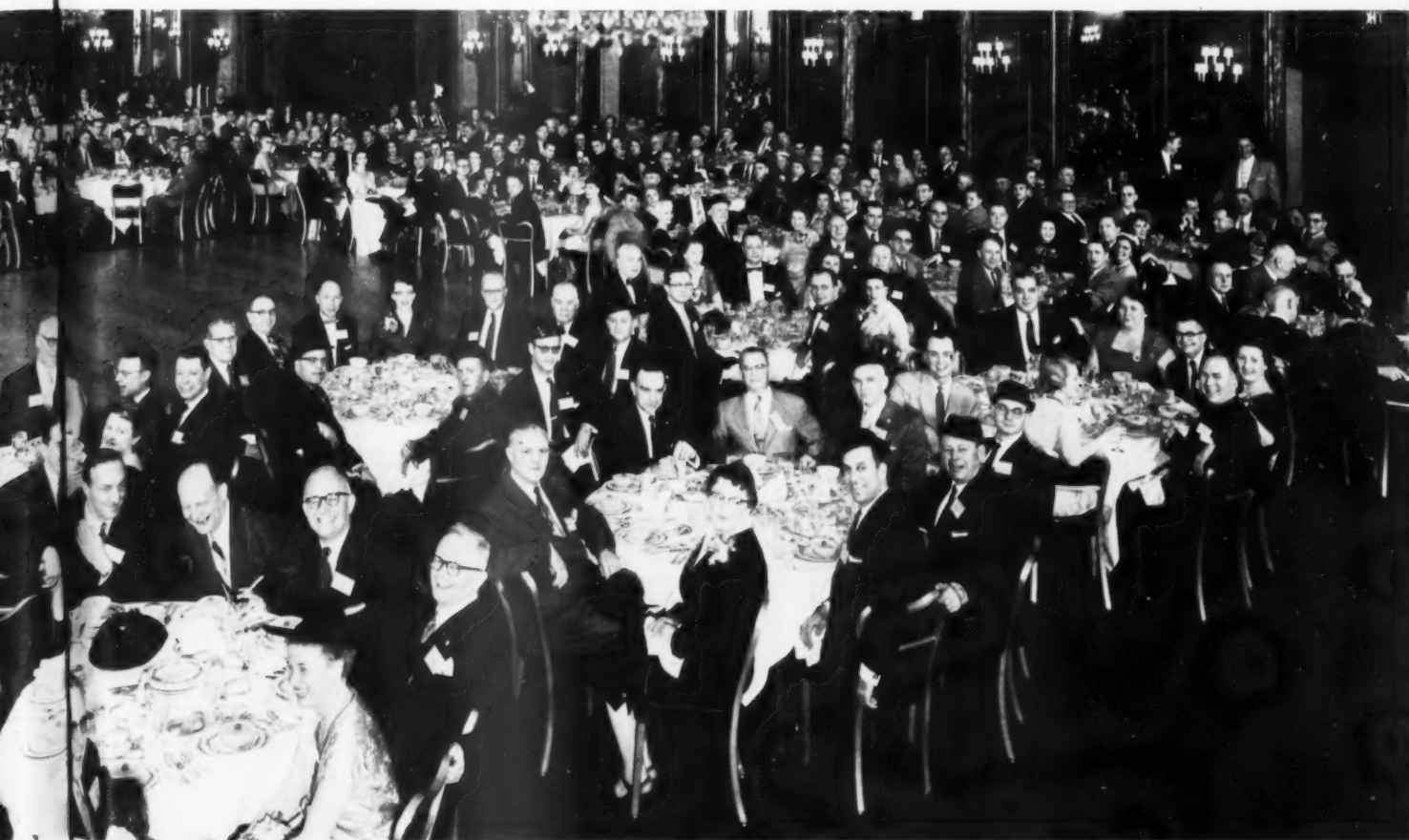
ment that (industry) "life begins at 40".

"Let me warn you," said Reeve, "that our predictions won't come true automatically! They won't happen just because we think they will. Our next move is to *make* them come true.

Hank credits past presidents

In accepting the gavel of office as president of AHLMA, Hank lauded the work of past presidents during recent years who headed the Association during years of "post war growing pains" and Association reorganization.

The new president entered a plea for active participation in AHLMA work by top executives of member companies "through actual attendance at meetings and becoming thoroughly acquainted with AHLMA affairs."



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Precision made brick allow lining to be laid up easily, quickly with minimum mortar joints—resulting in longer lining life and less batch contamination.

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Radial head brick are twice the size of conventional brick, tapered for accurate fit, easier to install, leaving no voids to fill with mortar.

The high strength, wear resistant Coors Alumina Ceramic permits the use of 1½" and 2" thick linings—thereby increasing useable mill volume.

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BRINGS YOU A *New* CERAMIC LABORATORY MILL JAR!

● Here is the new, 1-gallon McDanel Laboratory Mill Jar (PRJ-1G). It has been designed with recessed bronze hardware to prevent catching or holding on roller-type mills. This new McDanel Jar has a smooth, long-wearing, high-grade ceramic body . . . can be easily and quickly cleaned, inside and out. The close-fitting cover rests on a soft rubber gasket and can be tightened by hand without cracking or damaging the cover. There is no leakage. Neoprene gaskets should be used for oil base grinding. Investigate the McDanel PRJ-1G Laboratory Mill Jar now.



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TODAY! Gives complete
information on Balls, Mill
Lining, Mill Jars, Jar Mills,
Special Ceramics, etc.



MCDANEL

REFRACTORY PORCELAIN COMPANY
BEAVER FALLS • PENNSYLVANIA



Hang on lightweight Inconel

...for years of economical rod service

Have you tried Inconel® nickel-chromium alloy for hanger rods?

For long run economy in this service, you can depend upon Inconel.

Within standard enameling temperature ranges (1475 to 1550°F.) and on up to the range where high temperature ceramic coatings are applied (1850°F. approximately), Inconel nickel-chromium alloy delivers excellent heat and corrosion resistance. It resists oxidizing and other corrosive conditions common in enameling operations.

At those temperature levels, this nickel-chromium alloy retains high creep strength. Even after years of

continuous operation, Inconel rods of proper design show no stretch.

A change to wrought, light-weight Inconel rods can mean lower fuel costs, too. For, with less dead weight in the furnace, it takes less fuel to get to heat and stay there.

What's true of this alloy for drop rods, is equally true for burning tools and furnace parts.

So, if heat and corrosion are creating problems with items of this type, see what Inconel nickel-chro-

mium alloy can do. You can get more information by writing for "Keep Operating Costs Down . . . When Temperatures Go Up." It's free and a useful booklet to have. For detailed technical assistance, call on Inco's Technical Service Section.

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67 Wall Street New York 5, N. Y.

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Inconel . . . for long life at high temperatures

MANUFACTURING CONTROL

COATING DEVELOPMENT

TROUBLE SHOOTING

COLOR DEPARTMENT

NEW END USES

QUALITY TESTING



General view of the main research laboratory area of the Chicago Vitreous plant.

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The men behind ASTM committee C-22

background material on the leadership for a committee of 43, working for the interests of the porcelain enameling industry

COMMITTEE C-22 on Porcelain Enamel, American Society for Testing Materials, was organized in 1948 for the stimulation of research in the porcelain enameling industry and the formulation of definitions, methods of tests and specifications pertaining to porcelain enamels, ceramic and ceramic-metal coatings for metals. The Committee currently is composed of 43 members, of whom 36 are voting members, with 19 classified as producers, six as consumers and 11 as general interest members.

William N. Harrison, Chief, Enameled Metals Section, National Bureau of Standards, Washington, D.C., is Chairman of Committee C-22. Mr. Harrison, a graduate of Virginia Polytechnic Institute and the University of Chicago, has authored numerous publications in the field of ceramic coatings and porcelain enamels and was the recipient of the Department of Commerce Award for leadership in the development of coatings for the high-temperature protection of steels.

Mr. Harrison is a Fellow of the American Ceramic Society, Past-Chairman of that Society's Enamel Division, Chairman of its Standards Committee, and Past-Chairman of the Baltimore-Washington Section. He also is a member of the American Society for Metals and the Washington Philosophical Society. He has served as Past-Chairman of the Committee on Standardization of Tests for the Porcelain Enamel Institute, as a member of the ASTM Advisory Committee on Corrosion, The National Advisory Committee for Aeronautics, Subcommittee on Heat Resisting Materials, and the Guided Missile Material Panel of the Minerals and Metals Advisory Board of the National Academy of Sciences.

First Vice Chairman is Dwight G. Bennett, Research Professor, Department of Ceramic Engineering, University of Illinois. Mr. Bennett is a graduate ceramic engineer from the University of Illinois and did subsequent graduate work at the University of Pittsburgh. He has worked at the

George D. Roper Corporation, A. O. Smith Corporation, Metal and Thermit Corporation and Mellon Institute. He has authored a number of articles for *finish* on high temperature ceramic coatings, etc.

Second Vice President of Committee C-22 is Ralph F. Bisbee, Manager of Quality Control, Westinghouse Electric Corporation, Mansfield, Ohio. Mr. Bisbee, a veteran at Westinghouse, served as an Inspector, Assistant Chief Inspector and Chief Inspector, prior to his present appointment. He is General Chairman of the National Safe Transit Committee and Technical Consultant for *finish* on subjects pertaining to quality control, materials handling and packaging and shipping.

Dr. George H. Spencer-Strong, Vice President and Director of Research, Pemco Corporation, Baltimore, Maryland, is Secretary of Committee C-22. Dr. Spencer-Strong holds four degrees, including a professional engineering degree from The Ohio State University. Regarded as an authority on porcelain enamel, Dr. Spencer-Strong has perfected many new developments in scientific porcelain enamel procedures. He has worked extensively on the relation of microscopic structure to the enamel ability of cast iron and the application of the principles of metallography to the investigation of enamel defects, both in cast and sheet iron. He also has been interested in the application of scientific methods and instruments to enamel research problems, especially in regard to test methods.

Dr. Jesse J. Canfield, Supervising Metallurgist, Armco Steel Corporation, Middletown, Ohio, is Chairman of Subcommittee I on Research. Dr. Canfield is a graduate of the Oklahoma Agriculture and Mechanical College and holds two degrees from Iowa State College. Before joining Armco, he served with the Superior Oil Company, the Canfield Oil and Refining Company, the Empire Oil and Refining Company and as a member of the faculty of Iowa State College.

E. E. Howe, Vice President and Director of Research, Chicago Vitreous Corporation, Cicero, Illinois, is Chairman of Subcommittee II on Nomenclature. Mr. Howe received his B. S. and M. S. degrees in Ceramic Engineering from the University of Illinois. As a research laboratory assistant at the University of Illinois, he worked on problems relating to glass, enamel and clay bodies. Following his graduation he joined Chicago Vitreous Enamel Product Company as a ceramic engineer. He spent considerable time in connection with physical testing, frit control and development work and served as a sales engineer on field service problems.

Loran S. O'Bannon, Technical Advisor, Office of the Director, Battelle Institute, Columbus, Ohio, is Chairman of Subcommittee III on Education and is Past-Chairman of Subcommittee I on Research. Mr. O'Bannon is a graduate of Indiana University and the University of Louisville and also attended Evansville College and Case Institute of Technology. He served as process control engineer, Servel, Inc., Evansville, Indiana; and as research engineer and later as a divisional plant manager, Ferro Corporation, Cleveland, Ohio, before joining the Battelle staff.

Chairman of Subcommittee IV on Materials is Wayne A. Deringer, Assistant Director of Research, A. O. Smith Corporation, Milwaukee, Wisconsin. Mr. Deringer is an honor graduate of the University of Illinois and holds an advance degree from the University of Wisconsin. Before his association with the A. O. Smith Corporation he was employed by the Youngstown Pressed Steel Company.

Joseph C. Richmond, of the National Bureau of Standards, Washington, D.C., is Chairman of Subcommittee V on Finished Products. Mr. Richmond holds four degrees, two from the New York State College of Ceramics at Alfred University and two from the North Carolina State College. He served as Technical Editor of Industrial Publications, Inc., before becoming associated with the National Bureau of Standards.

B. J. Sweo, Coordinator of Research, Ferro Corporation, Cleveland, Ohio, is a member of the Executive Subcommittee. Mr. Sweo is a graduate of Gonzaga University and the University of Washington. Before joining the Ferro staff

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Clay free porcelain enamels

a report of tests using colloidal silica powder to replace the conventional clay addition as a suspension agent

by *A. L. Friedberg* • RESEARCH ASSOCIATE PROFESSOR, DEPARTMENT OF CERAMIC ENGINEERING, UNIVERSITY OF ILLINOIS



During the past year a new silica material has been made available by several chemical manufacturers.

This new product is composed essentially of extremely small-sized particles of silica and is being identified as colloidal silica powder. This material was investigated for its suspension properties in porcelain enamel slips, and for its effect on the properties of the fired enamels. Colloidal silica was sought for these experiments because of several promising characteristics, such as: an ability to suspend frit particles in a slip, the fact that it is an inorganic material and that it is a manufactured product and its chemical purity, as in most manufactured products, can be controlled.

Tests with colloidal silica used as a mill addition in the place of clay have indicated some interesting and useful properties. Although only a limited number of tests have been made on porcelain enamel slips containing colloidal silica, it is the purpose of this paper to report on some of those properties affected by this material.

Results of tests with colloidal silica

Colloidal silica powder has been checked as a suspending agent for several different titania enamels. Preliminary tests indicated that the optimum addition of colloidal silica is about 1%. Amounts of colloidal silica less than 1% in the mill required excessive amount of electrolytes to achieve proper set and suspension characteristics. Electrolytes used with colloidal silica have not been investigated thoroughly, but it was found that potassium

chloride was more effective than sodium nitrite in setting up the enamel slips. Mill additions of colloidal silica much greater than 1% caused the enamel slip to be extremely thixotropic, and under these conditions the enamel was difficult to mill and apply.

An evaluation of colloidal silica powder, used for the suspending agent instead of clay, indicated some definite changes in the fired enamel properties. In general these changes in enamel properties attributable to colloidal silica used as a mill addition were as follows:

1. Lowered maturing temperature
2. Improved gloss

3. Produced a more blue-white color
4. Decreased reflectance (green filter) with some enamels
5. Improved acid resistance as measured by citric acid spot test
6. Decreased acid resistance according to boiling citric acid test

An example of comparative results of two mill batches using the same enamel frit is given in Table I. Enamel composition 5902, selected for this example, is a low temperature (1350°-1400°F.) enamel when used with clay mill additions. This enamel frit was milled using clay in one mill batch and colloidal silica in another mill

Table I
Enamel 5902

| | | | |
|---------------------------------|------|---------------------------------|-----|
| Quartz | 31.8 | K ₂ CO ₃ | 2.1 |
| TiO ₂ | 21.0 | Li ₂ CO ₃ | 2.5 |
| K ₂ SiF ₆ | 15.5 | NaNO ₃ | 7.0 |
| An. Borax | 14.4 | ZnO | 1.0 |
| KNO ₃ | 6.5 | CaCO ₃ | 1.8 |

Silica Mill Batch

| |
|-----------------------------------|
| 100% Frit |
| 1% Colloidal Silica |
| 3% Pigment Grade TiO ₂ |
| 1/2% KCl |
| 45% Water |

Clay Mill Batch

| |
|------------------------|
| 100% Frit |
| 3% Clay |
| 1/4% Bentonite |
| 1/4% NaNO ₃ |
| 45% Water |

Fineness 1% on 325 mesh 50 ml sample

Application Dipped 3" x 4" ground coated panels to 25 gms./sq. ft. dry wt.

| Firing — Box Furnace | Reflectance and Gloss | |
|--------------------------------|-----------------------|--------------------|
| | Silica | Clay |
| 1350° — 6 minutes | 81.5 glossy | 80.0 glossy |
| 1300° — 6 minutes | 83.0 glossy | 81.0 glossy |
| 1250° — 6 minutes | 84.5 glossy | 88.0 matte |
| 1200° — 6 minutes | 84.0 glossy wavy | 89.0 matte |
| Panels Fired 1300° — 6 minutes | | |
| Boiling Acid Resistance | | |
| 6% citric acid, 2 1/4 hours | .0030 | .0032 gms./sq. in. |
| Spot Test | | |
| 10% citric acid, 15 minutes | A | A |
| Flow Value 1500° | 890 | 1094 |

batch. The mill formulas are given in Table I. The two mill batches were prepared at the same time, ground to a fineness of 1% on 325 mesh, and the enamel was applied to panels by dipping. Firing spreads were made for each mill batch, firing the cover enamel over a regular 1500°F. ground coat.

Editor's Note:

This is a timely subject, as there has been discussion on the use of this material since tests began last October. Several plant laboratories have made trials with colloidal silica powder, and results indicate some interesting uses of this material in enamels, but especially low temperature enamels and enamels in which clay mill additions are considered to be responsible for any degradation of desirable porcelain enamel properties.

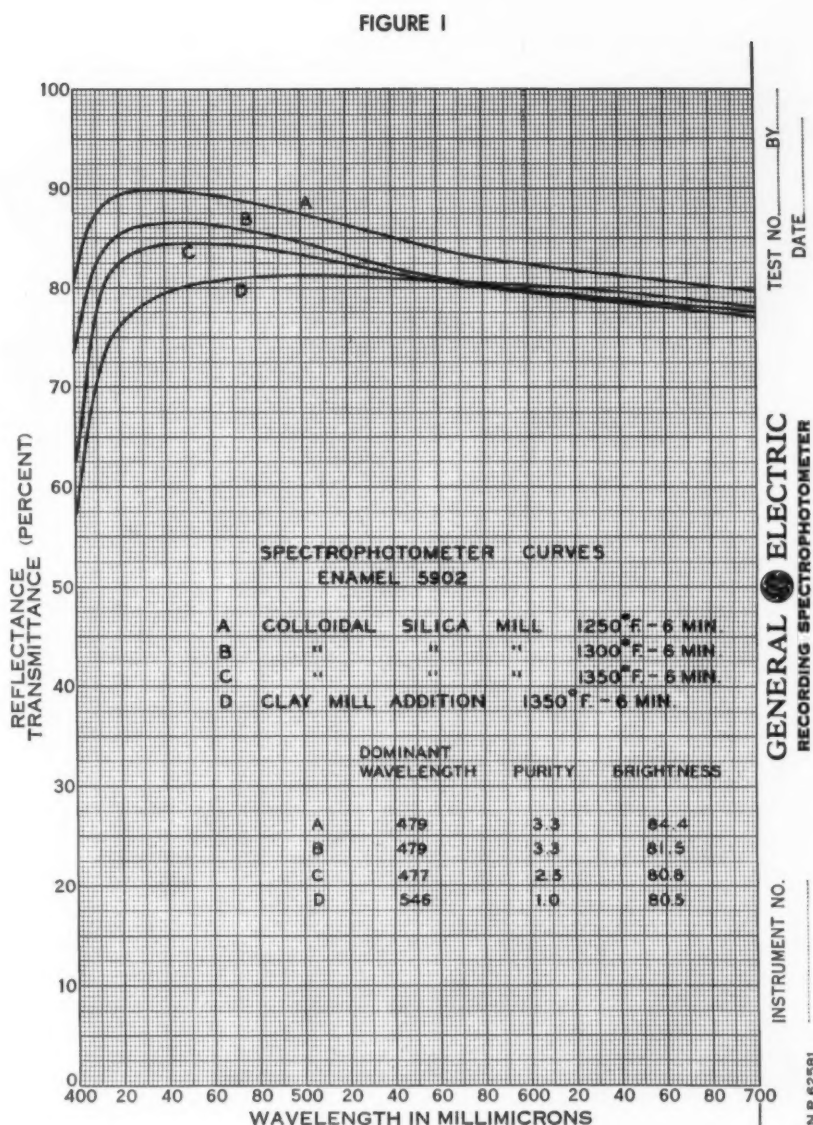
The experimental work on colloidal silica reported in the article was carried out at the University of Illinois. This subject matter has not been previously published nor presented.

The lower maturing temperature of the colloidal silica enamel was strikingly evident. This enamel fired to a high gloss at 1250°F. — 6 minutes, and to a glossy but wavy appearance at 1200°F. — 6 minutes. The clay-containing enamel fired to a glossy surface at 1300°F. — 6 minutes. At lower firing temperatures this clay-containing enamel produced a matte surface.

With this particular enamel the reflectance of panels fired from each of the two differently milled enamels was of the same order. In other trials, however, the reflectance, as checked with the Photovolt reflectometer using the green filter, was usually lower for the colloidal silica enamel.

With this enamel composition, boiling acid resistance and spot test acid resistance were identical for each mill batch; whereas, in most cases checked, the spot test indicated the colloidal silica enamel superior, and the boiling acid test indicated better acid resistance results with clay-containing enamel.

Flow values using length times width of the flow buttons made from the slip of each of the two different mill batches indicated higher flow for the clay-containing enamel. This lower flow value of the colloidal silica enamel is somewhat misleading for the reason that the flow button of the colloidal silica milled



enamel indicated much greater initial flow, as the average width of the buttons was greater compared to the buttons made from the clay-containing enamel slip. Button flow tests run at 1250°F. indicated no flow for the clay enamel, whereas the buttons made from the silica enamel had started to slump.

The color of the titania enamels appeared markedly affected by the change of suspending material. The color of the enamels milled with colloidal silica was more blue-white as it appeared to the eye. Spectrophotometer curves (Fig. 1) of glossy panels of enamel 5902 confirmed this difference. These curves are shown for glossy panels of the colloidal silica enamel fired at 1250°, 1300° and 1350°F. The spectrophotometer curves of the colloidal silica enamel indicate the dominance

of reflectance in the blue region of the spectrum compared to the spectrophotometer curve of the clay-containing enamel. Values for dominant wavelength, purity and brightness are given for these four spectrophotometer curves. There is a decided shift in dominant wavelength for the panel fired with clay-milled enamel compared to the enamel containing colloidal silica. Color of the enamel, of course, can be modified by choice of clay and is also affected by the choice of electrolytes and other additions to the mill.

There are several aspects of colloidal silica additions that have not been investigated fully. The effect of colloidal silica on bubble structure of the enamel and abrasion resistance has not been determined satisfactorily. Also, the use

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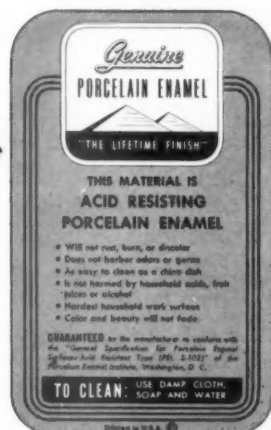
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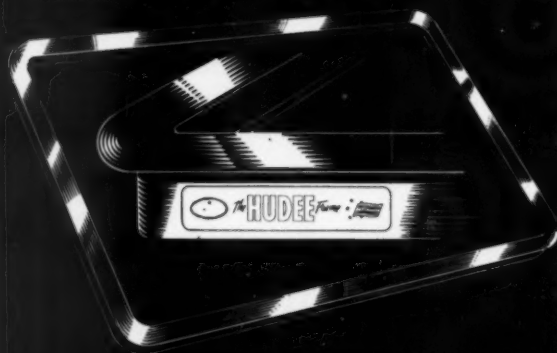
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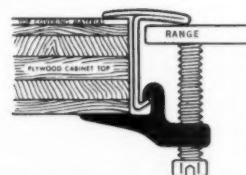
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the built-in market is lush, and ready—here is a comprehensive preview and a look into the future of . . .

Home appliance built-ins

by Margaret Stedman



Built-ins, stack-ons, and stand-ups . . . Three little words in the home appliance industry now . . . and three big words in its future. They are descriptive of the expansion to come . . . that has already begun its eruption in all directions at once, from the focal point of the American kitchen.

1955 did not mark the birth of the built-ins. That started way back in the Forties when two or three brave venturers stuck their ovens in a wall. 1955 marked the year when built-ins grew muscles.

Built-ins had to come. Their development was certain—as long ago as

when industry spokesmen began to refer privately to their big ticket whiteware as tombstones. Geared to the necessity of yearly model changes, designers had to come up with something bigger, something more colossal to keep abreast of competition. Stand-up appliances grew to such proportions that they threatened to crowd the homemaker right out of her kitchen. The range top rivaled the control board of an airplane, and name plates grew bolder and brassier. Something had to give.

From another angle, built-ins were due to rise, or something equally important in volume and profit to the manufacturer had to appear. Traditionally, the industry has had some new appliance available to spur its growth,

coincident with approaching saturation of whatever appliance was previously in demand.

Think back . . . in the late Twenties when washing machine sales slackened, the depression Thirties saw refrigerators carrying the sales ball. This was followed by the re-birth of gas and electric ranges and water heaters in the latter part of that decade. Then came freezers, slowly at first, and the fully automatic washers. Then home air conditioning. Progression of appliance development, curtailed by war years, gained new vigor with clothes dryers and television.

The past 25 year pattern shows a steady, straight line evolution of product development. Until now, that is.

Western Holly . . . Built-in oven-broiler unit, 6 burner cooking surface and Serval gas refrigerator are shown here. Western Holly now provides a built-in, motorized rotisserie in its king-size "barbecue-broyl" oven. Oven and cooking surface units are available in stainless steel and in yellow, green, blue, pink, desert sand and nu-tone bronze porcelain enamel.





Hotpoint . . . Blends satin chrome appliances with yellow ceramic tiles and black walnut in its built-in kitchen. Surface cooking units, base cabinets and drawers operate by pushbutton control. Wall cabinets open up and out, eliminating cabinet obstructions. Toaster, mixer and coffee maker rise at the touch of a button.

With television blanketing better than 32,000,000 homes, and color reception dragging its heels, the industry had to have something new — and built-ins appear to be it. From all indications the entire industry is heading into another market expansion — not a straight line development, but a geometric expansion in all directions, and involving most of its old, familiar products. And a colorful future it is. How profitable it will

be will depend on how well the manufacturer handles this many-colored, prosperity-born newcomer. Marketing built-in appliances is not without problems — some of them severe.

We do not mean to imply that current enthusiasm for built-ins has overshadowed and overtaken the existing home appliance market, and that stand-up merchandise is obsolete and outdated. Built-ins presently have a small

Martha Washington . . . Gray & Dudley produces both gas and electric built-in ranges in a number of colors and color combinations. Ovens are standard size in both types — 16 x 19 x 14. Where once stainless steel accounted for 98% of its volume, coppertone now takes 70% of total, with stainless steel about 25 to 28%.



share of the market — only about 5%. Stand-ups will go merrily along with our booming times. But that 5% is significant, and indicative of the future to come. Significant, also, is the fact that in the short space of three years, the number of manufacturers producing built-ins has progressed from a number that could be counted on one hand to better than 30.

To pin-point just what manufacturers were planning, *finish* surveyed 44 representative manufacturers whose production included kitchen ranges, since this appliance is undergoing the most radical change in design. Of those surveyed, 24 are actively engaged in marketing built-ins; 8 either have built-ins on the engineering board, or were keeping curtains around new models when the *finish* survey was conducted; 12 have no plans presently to produce built-in appliances of any kind.

Before showing what the range manufacturers have to offer in built-ins, let's have a further look at the market, the built-in effect on distribution, and its future.

The market for built-ins

New homes are presently being built at the rate of 1.2 million per year. This rate is expected to continue until, by 1960, 12,000,000 new homes will have been built in the 10-year period, 1950-60. Compare this with less than 7,000,000 new homes constructed in the 1940-50 period. By 1960 the U.S. is expected to have approximately 54,700,000 dwellings; obsolescence of a certain percentage of existing houses is taken into consideration in arriving at this figure. This increase in housing must take care of the predicted 24,500,000 population increase during the 1950-60 decade.

First and foremost, built-ins are new home items. Without the booming house building market, it is doubtful that the coordinated kitchen would capture the housewives' imagination. There will be few to challenge the statement that the kitchen is now the most important room of the house; important because of this servant-less era, and important because it has emerged as a second living room, the control center around which the whole of the new home revolves. Without this concept in home building, and without the accelerating demand for housing, the built-in kitchen market could not have come into existence.

How much of the new home market will be captured by the built-ins? Opinions vary, but all show a healthy slice: The American Gas Association reports that 35% of new homes have built-in cooking units. Building contractors report that one-third of all new homes use built-in appliances. And such built-ins aren't limited to luxury bracket houses.

We have been accustomed to a long pioneering phase for new products . . . that period wherein the well-heeled only could afford to buy. But as we have speeded up in everything else, so we have pushed ahead in opening up mass acceptance and demand for the new. The old Twenties marketing axiom of selling Mrs. Jones first and then getting all those who wanted to keep up with her, has gone into the discard. The modern housewife doesn't care a hoot what Mrs. Jones has. She knows what she wants. She has been educated and made aware of what is new, and she demands it, so far as her buying power will permit because she wants it for itself — not because Mrs. Jones may possess it. In her thinking there is no Mrs. Jones.

A survey among builders shows that 68% of new homes they constructed with built-in appliances are in the \$14,000-\$30,000 bracket; 16% of homes with built-ins are in the \$14,000 group or under, with an equal 16% in those costing over \$30,000.

The ability to bury the cost of a completely coordinated kitchen-utility area into the cost of the house is the biggest factor in the sharp, speedy growth of built-ins. The mortgage does it. If owners had to produce the cash to pay for the complete package, or even had to set it up as a separate installment purchase, the built-in market would have severe limitations — enough to retard its development into a crawl instead of a gallop.

The restless surge of home building

Second biggest growth factor is linked directly to the restless surge of home building, and the brisk movement of real estate. Owners of older homes in the good, well-constructed upper brackets are caught in the moving enthusiasm. Those who once thought they lived in suburbia find themselves elbowed by housing developments as new construction fans outward from metropolitan



Sub-Zero . . . Features a line of built-in freezer-refrigerator combinations, ranging in capacity from 9.5 cu. ft. freezers to 24.2 cu. ft. Double-door models have freezer in one side, refrigerator in the other. Exterior finishes in a variety of colors plus stainless steel and coppertone.

centers. The urge is to move still farther outward, away from crowded areas. Selling such recent-older houses can be a problem, if the kitchen is obsolete; for the prospective buyer looks sharply at the kitchen. And if it isn't modern it has the effect of depressing the asking price, or effecting a complete turn-down. So important has the kitchen become that the owner who wishes to sell can often only get his asking price by in-

stalling a modern kitchen renovation before he puts his house on the market.

The home buyer who is also the built-in buyer is pretty well educated on kitchens. The need doesn't have to be sold. Every general magazine on the newsstands — from fashion to farm, has at sometime in the past year or more run a section on the great news in built-in kitchens. Most often these are in full-color photography. Every model home

Roper . . . New "500 series" units are featured by Geo. D. Roper Corporation. Frame surrounding the oven unit is bright chrome, attached without benefit of screws. Exterior surface units and ovens are available in satin chrome, regency yellow, sea mist green, black and white. Both oven and surface units have "Insta-Lite" gas ignition.





Admiral . . . Features a dial on its surface cooking unit that permits the homemaker to dial the exact temperature for various requirements and holds the heat automatically at the desired temperatures. Wall oven features an elevator broiler rack that permits foods to be raised or lowered at the touch of a lever. Both are produced in brushed chrome or stainless steel. Optional equipment of a self-basting rotary roaster is available, as well as a plug-in grill that is thermostatically controlled.

show exposes additional thousands to the same lure. Television and newspaper features catch those who might have missed the first two media. It adds up to the greatest pre-selling job in appliance history, and largely through eye-appeal alone.

All this in a prosperity period whose proportions were undreamed of even 10 years ago. And a period when installment buying has become a way of life—a way to get more mileage from after-taxes income.

The built-in market is lush, and ready, and ripe.

The product—color and coordination

If functional design is the “brick” of the built-in market, color is the mortar. Such strides have been effected in the use of color, that it was only a question of time before it penetrated the stronghold of the kitchen. Color is being scientifically used to influence our daily living—often we are unaware of the effects it produces. Sometime soon, some alert scientist is going to prove—and who is to challenge—that our positive, dynamic prosperity is due to the stimulation of color.

Kitchen color presently knows no lim-

iting factors. Name any color in the spectrum and you will find it in someone's kitchen, except, possibly, royal purple. And we may be wrong about that. There are over 100 different shades of color available in appliances themselves.

Narrowing down the color rainbow to individual built-in appliances that must be coordinated into the kitchen color scheme: Presently the established preference for stainless steel in wall oven doors is being challenged by the trend toward copper tones. Porcelain enamel in copper shades, and copper alloys appear with increasing frequency in manufacturer specification sheets. While these two lead the color parade, they are being crowded by a growing variety of porcelain enamel colors.

White is still a color factor among built-ins, despite the fact that the colored kitchen is vivid expression of the revolt against the monotony of all-white appliances and kitchens.

Color is almost as vital a consideration in built-in success as is cabinet design. The latter must be flexible indeed to coordinate with the kitchen plan, yet with specific dimension to accommodate a diversity of appliances that will become a part of the built-in whole.

Standardization of cabinet dimension and design is one of the big problems to be hurdled by the built-ins. Cooperation between builders of cabinets and builders of appliances is now a necessity; neither can function profitably without functioning together. Since mergers are in the air, we may see appliance firms absorbing cabinet producers, and vice versa. One major appliance firm's kitchen division has already announced production of a “universal” oven cabinet that will accommodate 10 competitive makes of gas ovens and 14 competitive brands in electric ovens.

One of the largest appliance makers introduced a completely integrated kitchen this Spring. It comes complete with its own walls, lighting, plumbing, venting facilities. All the builder needs do is set it into the unfinished walls of the kitchen area. Along with the customary appliances, this kitchen will include a built-in radio, communication center that features a “no hands” telephone, intercom system and door chime, built-in vanity, lighter and ash tray, and

Lyon Metal Products . . . Photograph illustrates the adaptability of this company's all-steel kitchen cabinets to newly designed stack-on oven and surface cooking units. These kitchens can be designed to use either conventional or built-in refrigerators.



other convenience gadgets, with optional equipment available.

Three basic types of built-in ranges

There are three basic types of built-in ranges presently available: (1) The truly built-in which requires specific cut-away in cabinet and counter-top, (2) Fold down shallow surface units that stack vertically against the wall above a counter top when not in use; they swing down for actual cooking, stack away when not in use, providing additional counter space, (3) Stack-on oven units that simply stack on — there is no other way to describe it — on a standard dimension cabinet base.

The three-way problem

The trend toward furnishing Mrs. Consumer a kitchen that looks custom-built by mass production methods brings with it problems in installation, distribution and service that make those of the plug-in days something to look back on with nostalgia.

The manufacturer's job is not finished when his conveyor belts deposit a gleaming new dismembered range at the shipping station. Getting it into satisfactory use is still his responsibility. Installation and more coordination ensue, and thereby hangs the real tale of distribution.

The builder is a key factor here. In new home installation, the manufacturer must work directly with the builder, and much of the distribution of built-in equipment is handled direct with him, by-passing the appliance dealer. The upsurge of built-ins has compounded the problem of retail distribution, already in a state of turmoil through the emergence of discount selling, and crumbling Fair Trade laws. The once-typical appliance dealer is not generally equipped to handle built-in installation profitably or efficiently in these early days of the kitchen revolution. But we have no doubt that the fittest among them will survive, and will soon be doing the job.

Proper installation boils down to a few simple fundamentals. Wall ovens, when installed in the kitchen wall, must be positioned with care for combustible areas in the construction, and if adjacent to joists require additional insulation as a safety precaution. Gas ovens require venting to the outside. Most manufacturers specify outside venting

Tappan . . . Along with its spectacular electronic built-in range that utilizes microwaves to generate heat in the food itself, Tappan produces five different surface units and eight different gas ovens; seven electric surface units and a separate griddle unit, and eight electric ovens. Both gas and electric ovens feature standard 24 inch cabinet space. Surface units vary in number of burners and arrangement. Shown in the photograph: the electronic unit that bakes a potato in five minutes, cooks a five pound beef roast in 30 minutes and broils bacon on a paper napkin or paper plate.



to provide a cooler kitchen. Electric ovens usually require a standard 3-wire flexible conduit, 120-140 v., 25 to 35 amp. capacity, same as for stand-up ranges.

Electric service outlet location varies with manufacturers; some require connection to be made on the top of the oven, others specify connection around, or at the bottom. Service connections vary similarly in gas ovens, which require a 3/4" gas stub and a 110-v. electric outlet. Electric ovens are customarily rested on 2 x 4s, while gas ovens are supported by a solid platform to

prevent drafts blowing out the pilot light. Wall ovens are installed at the most comfortable height for the housewife. If she's a tall gal, the oven goes higher; if she's a shortie, the oven comes down to her size.

Cooking surfaces can be sunk in counter tops at the designer's will, along the wall, or in island units in the kitchen center. Limitations are in order here also, for combustible surfaces at side and rear must be considered.

Adequate planning of working surfaces must be made for wall ovens, as well as adequate storage nearby; the

Florence . . . Stainless steel oven and surface units are produced by Florence. Oven has "king-size" dimension with broiler area located underneath. Florence calls its thermostatically controlled surface unit the "Governess".





Tennessee Stove Works . . . Offers a complete line of gas and electric built-in ranges, finished in either coppertone or stainless steel. President L. H. Caldwell, Jr., states that . . . "we have a very unusual first in the industry. We are making a drop-in four burner electric top unit only 3" deep which allows drawer space underneath the top surface burners. We also have a new "thermal eye" on the right rear burner, giving us a thermostatically controlled top unit, and yet allowing drawer space underneath when mounted in the counter top."

same holds true for surface units.

All these points must be worked out between manufacturer and builder, so where does the appliance dealer come in?

He can come in, in the matter of stack-ons, for one thing.

Range manufacturers, alert to the large percentage of the market outside that of new homes, haven't neglected to make the built-in look avail-

able to those home owners who can't, or won't, knock out existing walls to make way for the fixed, built-in kitchen. The same ovens, the same surface units are possible in any remodeled kitchen through the stack-on method mentioned previously. Or they are produced in one unit, still with the built-in look.

In effect, these models are modernized versions of the old spindle-legged, high

level, side-of-range-oven with all the wasted space underneath that the housewife joyfully traded for the low-down oven cabinet range of the thirties. Newly-designed stack-ons, and add-ons can mean profit to the appliance dealer. The biggest, best share of the market can come from the remodeled kitchen in older homes.

Selling methods are changing

Appliance dealers are already changing their selling methods to take best advantage of the built-in trend. Resent-

American Kitchens . . . Builds a "universal" gas and electric oven cabinet that accommodates 24 makes of ovens. Cabinets accommodate other built-in products including dishwashers, stack-on ovens and ranges, a revolving corner storage cabinet, and Serv-Cart. Built-ins are finished in copper or white. Shown is the coppertoned stack-on oven and range top.



Chambers . . . Features food preparation on both wall oven and surface units at the same waist-high level. But units fit on compact 24" wide cabinet bases of the same type. Exposed sides of oven are finished in either stainless steel or plated antique copper, as is the surface unit. In this grouping work space is provided between the two range units.



Frigidaire . . . Even the largest roasts can be cooked on this new automatic electric rotisserie which has been added to Frigidaire's built-in wall oven as optional equipment. Rack, spit and pan attach to the sliding oven shelf. When entire unit is moved back into oven in cooking position, the spit connects with power unit concealed behind the oven wall and starts to rotate, automatically. Fold-back surface heating units at left provide extra countertop work area when not in use.



ment of the direct selling by manufacturer to builder exists, and dealers are shifting their policies to divert the appliance flow back in the old familiar channels. Some use built-in promotion as a come-on, then direct buyer interest to stand-up models that can be fitted into the otherwise coordinated kitchen. They have potent sales points . . . lower installation costs, playing up the higher service cost of built-ins, the lower cost of the range itself. Others play up the cost of installing a complete kitchen; concentrating on selling the prospect a new

appliance at a time, a sort of kitchen add-a-pearl.

A survey by *Woman's Home Companion* among dealers to feel out the built-in impact indicates that half of those surveyed experienced a relatively small increase in demand for built-ins in 1955; 30% had substantially increased demand, and 20% noted no change. Two-thirds of these dealers do

not have personnel that can handle installation. This is the dealer's big problem — a three part obstacle compounded of equal parts of cabinet fitting, plumbing and electrical connections.

Heading the list of things the dealer wants is, naturally, selling built-ins through dealers only. Considering present selling methods in the field, that is what he isn't going to get. Here is a

Norge . . . Has tied up with Beauty Queen kitchens (Toledo Desk & Fixture Corp.) to offer a coordinated kitchen. Norge is presently concentrating on simplified built-in equipment that doesn't require cutting out walls. Oven door is produced in white porcelain, copper, silver and gold-tone. Two to four-element counter-top cooking units are available.



Thermador . . . Pioneer of the built-ins calls its newest range the "Masterpiece". Features a ventilated door, a choice of 12 cooking tops and a warming drawer. Finish is stainless steel with midnight blue controls and door handle. Oven interior is white stippled porcelain enamel. It contains nearly 6500 cubic inches of usable space.





Majestic . . . Brings the barbecue into the kitchen with its all metal units that have adjustable grates, making them suitable for either charcoal or other types of fuel. Majestic Co. concentrates its major production on bringing these units into the ranch type house from the outdoor barbecue. Units can be used in kitchens, recreation rooms or patio.

big area for a meeting of minds . . . the manufacturer can't afford to by-pass the dealer, nor can he afford to ignore the direct-to-builder distribution that built-ins demand.

Service—a factor to consider

Service is not yet looming large as a problem — installations are too new. But eventually, service is going to be a factor to consider. Without question, integrating such equipment into the wall structure will complicate service problems, and undoubtedly will up service charges. The now-ancient crack that if a built-in appliance fails to function it will require the services of a plasterer, carpenter, mason, plumber, electrician and painter is not quite true. Nevertheless, there must be considerable re-education of service personnel and revision of service manuals. Dealers generally dislike it, the discount volume boys will have none of it, the builder can wash his hands of it. Presently the burden of service falls on the utility companies.

These are the problems in the bright new built-in picture. Each is getting attention, each will resolve itself as the industry settles into the stride that will carry it forward.

Built-ins are here to stay. They are planted firmly in the market, and the idea is firmly rooted in the home-maker's mind. What appears so new, so radically different presently will be obsolete 10 years from now. Normally we would say 20 years, but this is a time of swift, volatile change in our concepts of living. Electronic function is already effecting changes within the home and kitchen. Atomic energy utilization within the kitchen is nearer than

we realize. Solar energy utilization isn't a far-off dream. We wouldn't hazard a guess, at this moment, about what the kitchen of 1965 will be.

Roger M. Kyes, Vice President of General Motors, believes that in a few years, families will trade in their kitchens complete, as they presently trade in cars. He believes . . . "we are on the eve of a major break through on an important front, emancipating the American housewife."

In an editorial appearing in *Town Journal*, Mr. Kyes states further: "Appliances will improve so rapidly that we will get the same kind of 'dynamic obsolescence' that causes people to buy new cars every year or every two or three years . . . Customers will have enough money in 1965 to afford these luxuries and conveniences. Moreover, as the swing is made into volume production,

Caloric . . . Island surface cooking and built-in oven are shown in the photograph. Caloric calls its built-ins "middle-of-the-road". Built-in door panels are available in bright or satin metal finish, coppertone, yellow, pink, blue, green, black and white. Caloric offers detachable door handles in decorator colors that permit housewives to change their minds about color whenever they please.



Editor's Note:

Some of the early issues of *finish*, dating back as far as 1944, contained feature editorial material on appliance manufacturing plants prepared by the husband and wife team of Gerald and Margaret Stedman. This writing team toured the country from coast to coast preparing "on the job" material and during the mid-Forties handled a number of assignments for *finish*.

Death terminated the writings of the Stedmans as a team when Gerald Stedman passed away in 1953. Mrs. Stedman fulfilled a number of her husband's writing contracts for two more years. She then joined the staff of National Research Bureau, Inc., as a writer and editor and dreamed up a magazine, *Consumers Information Guide*, which she now edits. This year-old, pocket-size monthly magazine has a circulation of over 150,000 among banks, building and loan houses and other business firms.

Following our research program among manufacturers to determine the extent of interest, engineering and production on "built-ins," we could think of no one better qualified to develop this subject in interesting form for our readers than Margaret Stedman. You will read her conception of the current picture in these pages.

you'll get more and more value per dollar."

So much for the future. We will concede it is brilliant, indeed. Let's look at what is immediately on the horizon, here and now, and act accordingly.

What the manufacturers say about built-ins

comments from leading appliance manufacturers based on their experience with built-ins at the time of the *finish* 1955 survey

READERS of *finish* will be interested in the following comments selected from the *finish* 1955 survey of manufacturers as they offer a cross-section of opinion on the subject of built-in appliances.

We stress the fact that these comments are dated as of the '55 survey which was conducted prior to the preparation of the preceding article by Margaret Stedman. The development is moving so rapidly that future statements in *finish* by the same or other manufacturer executives may offer contrast in connection with production percentages, materials and colors used, and other factors discussed.

ADMIRAL CORPORATION

To *finish*:

"The prospective home builder and the home owner who is planning to remodel his kitchen will find the new built-in range and wall oven the answer to almost any problem in kitchen design and layout.

"The Admiral range is offered with five different cooking tops, three with two-element and two with four-element units. There are two choices of wall ovens, one with a picture window, the other with a standard door.

"The new built-in range contains many features found on Admiral's conventional electric ranges, including Flex-O-Heat surface unit controls with an infinite number of heat settings. The custom wall oven is large enough to accommodate four pies.

"An automatic electric timer clock turns the oven on and off at a pre-selected time, while an electric minute timer will time any cooking period up to 60 minutes."

B. H. Melton
Sales Manager,
Built-In Range and Oven Div.

CHAMBERS RANGES, INC.

To *finish*:

"A desire to provide home builders with a choice of fuel among Chambers built-ins was an immediate consideration. In built-ins, an area pioneered by Chambers, there have been substantial sales increases during the past several years.

"I predict that the company's comparatively new electric line will result in a still greater acceptance of Chambers appliances in the home building industry.

"The electric built-ins have the same exterior dimensions as their Chambers counterparts in gas. This provides the builder with flexibility, since he is able to offer the units in either gas or electric with no costly alteration in cabinetry.

"With the increase in the building of suburban homes, there is a growing trend toward better quality equipment, especially appliances used in the kitchen. We feel that with the development of our new built-ins, we are meeting a need felt by builders in their efforts to upgrade today's housing."

A. H. Scheffer
Sales Manager

AMERICAN KITCHENS

To *finish*:

"American Kitchens has great confidence in built-ins and those 'built-ins that aren't built in' — the stack-ons.

"A-K has introduced 'universal' oven cabinets for gas and electric units. Offered in both the white steel and wood-copper-steel Pioneer lines, these cabinets accommodate 10 makes of competitive gas ovens and 14 electric ovens as well as our own.

"This is our answer to that standardization bogeyman that has plagued the built-in oven. Since we're mainly manufacturers of kitchen equipment, we recognize the fact that some people want a

make of oven other than ours.

"Also, there is the standard front panel for our range base cabinets, making it possible to use a number of range tops with them.

"We have a broad Spring promotion and advertising program focused on built-ins.

"The No. 1 built-in, we believe, is the undercounter dishwasher. Soaring sales of dishwashers convince us there is a tremendous market.

"American Kitchens is going all-out to accelerate dealer interest in the built-in business. While the stack-on is a 'built-in that isn't built in', it gives the same effect and has valuable advantages.

"Ovens built into masonry help create a kitchen out of this world. But for many homes — especially older ones — they're also out of the question. While we greatly admire the 'ultra' built-in, at the same time we remain acutely conscious of the importance of stack-ons.

"The housewife loves them because they match up with her kitchen; hubby loves them because it's not necessary to tear up the kitchen to install them; the dealer loves them because they are so adaptable to display and a 'natural' for the remodeled home. And, of course, we love them because all these people do."

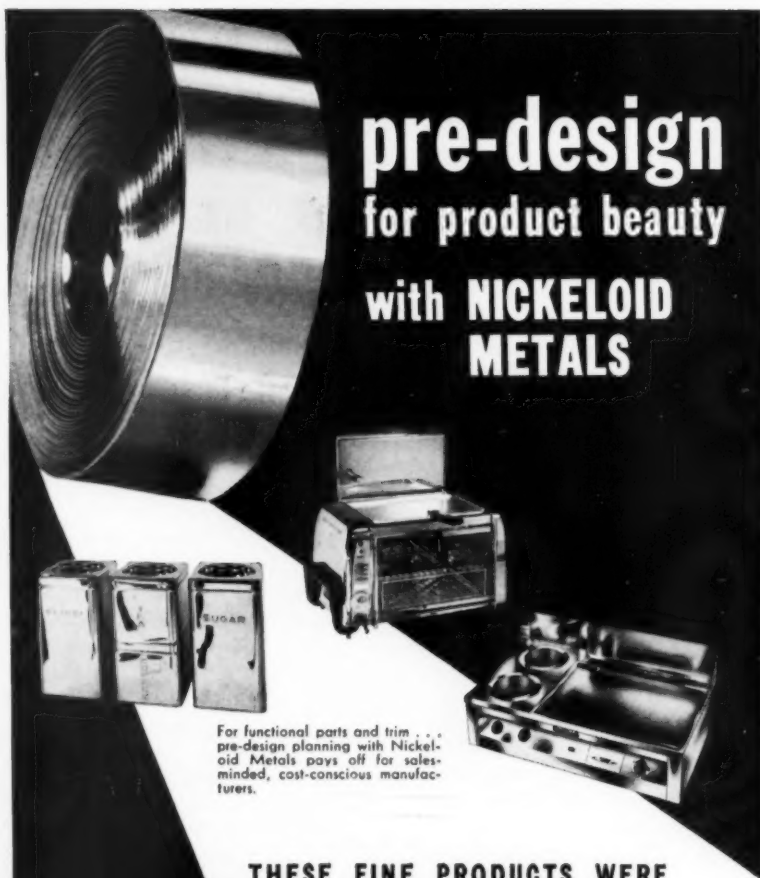
C. Fred Hastings
General Sales Manager

THE TAPPAN STOVE COMPANY

To *finish*:

"Keeping in step with the nation's ever expanding home building boom and trend toward the ultramodern in appliances, the Tappan Stove Company now produces the industry's most complete line of built-in gas and electric ranges. Development and engineering indicate that the variety of Tappan appliances will be increased even more.

"Our look to progress is best illus-



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trated by the pioneer development and production of the world's first electronic range for home use using microwave energy."

R. B. Davis
Manager,
Special Products Division

TENNESSEE STOVE WORKS

To finish:

"We make a complete line of gas and electric built-in ranges and are making them in coppertone or stainless steel.

"We have an unusually fine sales organization on built-in ranges and believe that they are the greatest thing that has happened to the appliance industry in years.

"We have a very unusual FIRST in the industry. We are making a drop-in four burner electric top unit only 3" deep which allows drawer space underneath the top surface burners and, in addition to this, we have a new *thermal eye* on the right rear burner. This gives a thermostatically controlled top unit and yet still allows drawer space underneath the unit when mounted in the counter top."

L. H. Caldwell, Jr.
Vice President and Secretary

FLORENCE STOVE COMPANY

To finish:

"We are convinced that the built-in range market is here today. A real problem is to determine what variations of the built-in range unit, including color selection, will be most acceptable to the consumer and yet most feasible from the production and inventory aspect as far as the manufacturer is concerned. Florence has conducted extensive research on these problems and we feel we are adequately equipped with the right answers."

R. H. Taylor
President

(Florence is currently offering gas built-in surface burners and a special dealers' display to help sell them.)

GRAY & DUDLEY COMPANY

To finish:

"Gray & Dudley Company, after an extensive survey, became convinced of the future of built-in appliances in the construction and remodeling of America's kitchens. We are thoroughly convinced of the future of built-in appliances, and our current plans are to de-

sign and promote this feature with all our vigor.

"I have read some statistics showing that built-in ranges amount to 5% of the entire range business but, as far as we are concerned, this is entirely out of line. It is a much larger percentage and we think it will increase as the months go by.

"We are finding, at the present time, that the type of finish on built-in appliances has changed considerably. The porcelain is practically nil. Whereas stainless one time accounted for about 98% of our volume, this percentage has changed and about 70% of our volume is in coppertone and 25 to 28% is in stainless steel."

R. E. Grimsley
Vice President and
General Manager

WESTINGHOUSE ELECTRIC APPLIANCE DIVISION

To finish:

"The very nature of the built-in appliance—its relative permanent location—makes it impractical for the homemaker to trade it in when she needs more capacity. Therefore, it has been the Westinghouse policy to design its built-in appliances to provide more capacity than most competitive models.

"Our oven unit, for instance, has the largest capacity of any built-in oven on the market today as far as we know. It is a full 24 inches wide—large enough to cook for the biggest family.

"Both the built-in refrigerator and the built-in freezer are equipped with separate refrigerating mechanisms permitting complete freedom of location of the two units in the kitchen. They can be installed side-by-side in a horizontal arrangement, one above the other in a vertical cabinet, or even across the room from each other. They are sold in matching pairs, however.

"In the sink area are three more built-in appliances—the dishwasher, water heater and food waste disposer. The dishwasher is equipped with a temperature monitor which assures the user that her dishes are being washed in hot water of the correct temperature to provide maximum washing, drying and sanitizing efficiency. If the incoming water is not of the correct temperature, the cycle is delayed until a heater brings the water to the required temperature."

R. J. Sargent
General Manager,
Major Appliance Div.

CALORIC APPLIANCE CORP.

To finish:

"Often the newest is not really new... a revolution may be a return of old values. In a sense this is true of the gas range units that are going to revolutionize the kitchen. Actually, they are going to restore the kitchen to its ancient position as the heart of the home.

"The Caloric built-in gas range units are the result of demand: when the need existed, the product naturally developed. Built-ins simply are separate top burners and oven-broiler units which are in-

stalled in the kitchen. Existing in this simplicity, however, is a flexibility of design which means more space, more beauty and better cooking in your kitchen.

"Our early experiment in built-ins was so gratifying that we have now gone into full production of them on an assembly line basis. We find that architects and home builders throughout the nation have leaped to the opportunity of making their kitchens more beautiful.

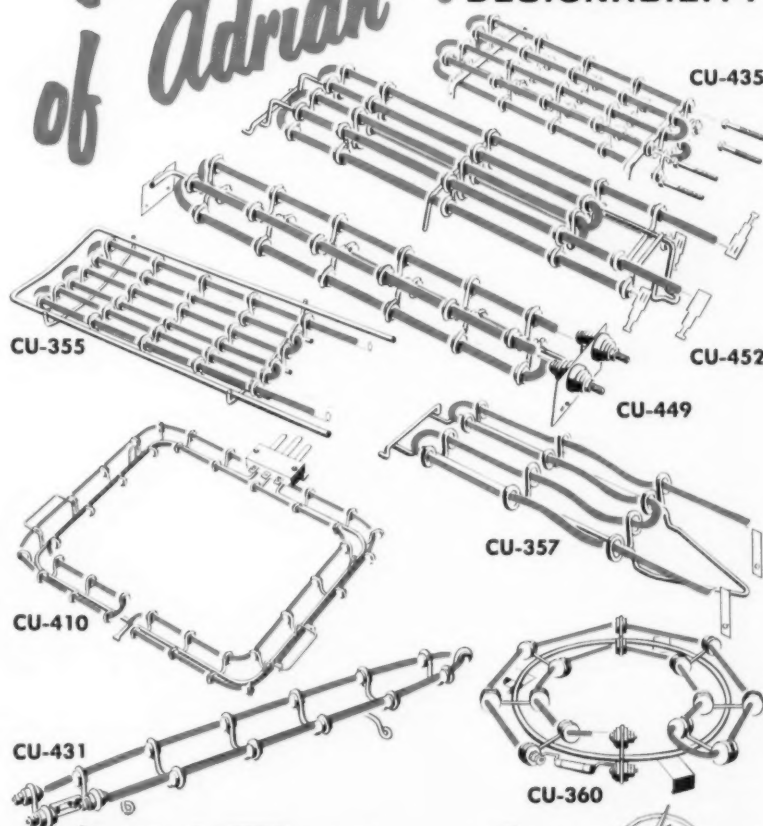
"Architects have welcomed the built-ins as a vehicle for designing modern, to Page 84 →

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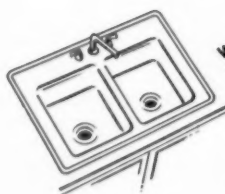
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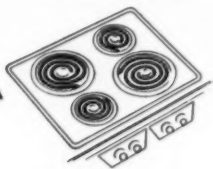
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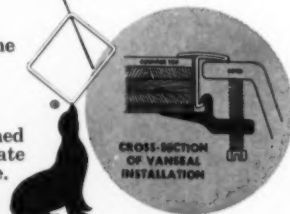
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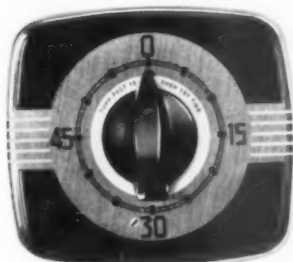


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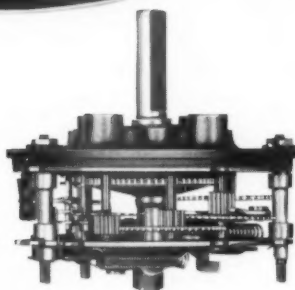


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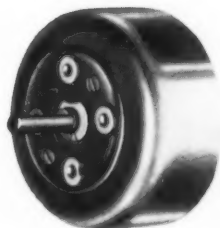


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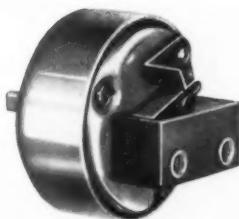
Timer with
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TIME INTERVAL

Timers are available in four time cycles, 15—30—60—120 minutes, with a 360° pointer rotation.

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When knob is turned to the HOLD position, the clock escapement stops until the knob is manually turned backward. While in the HOLD position, the actuator or switch remains in the ON position.



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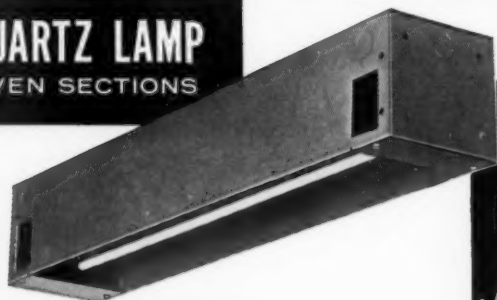
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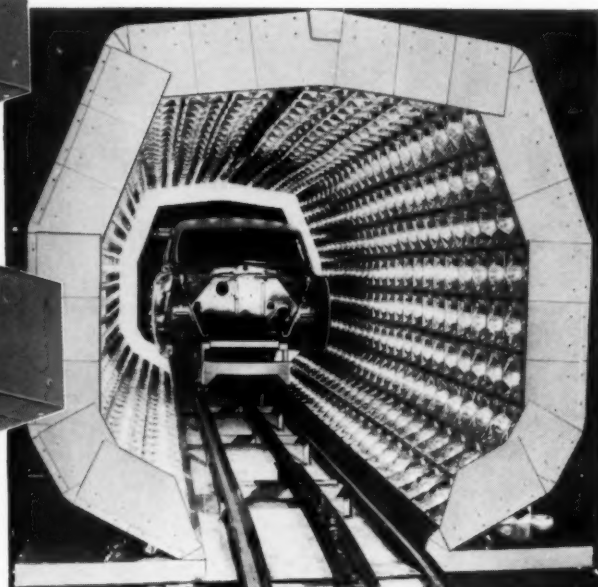
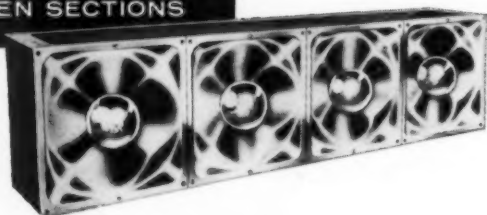
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OVEN SECTIONS



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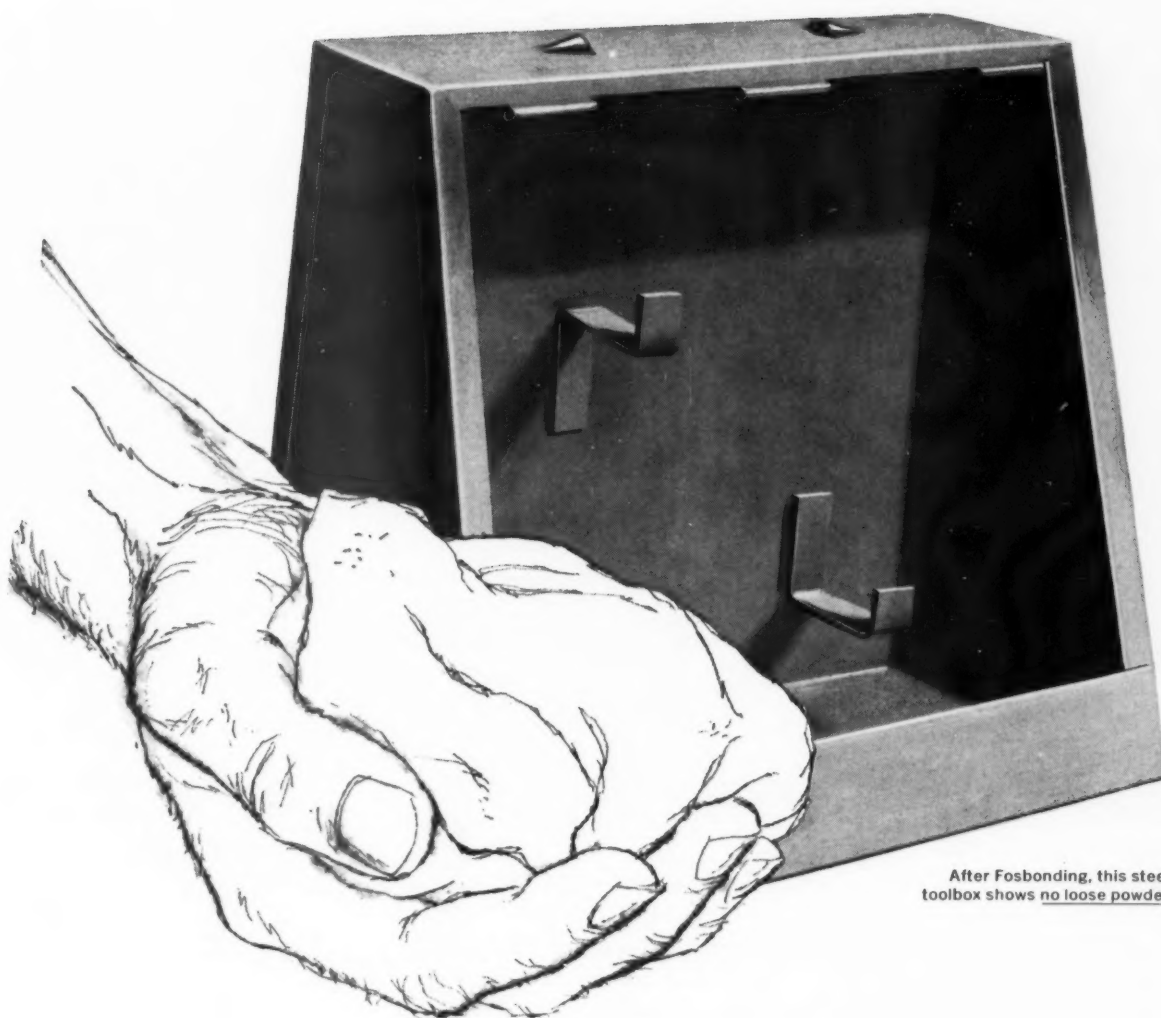
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Get powder-free iron phosphate coatings under organic finishes with **FOSBOND 22**

Here's a truly dependable iron phosphate coating! Fosbond® 22 assures uniform, trouble-free phosphate protection of metal parts, cuts your finishing rejects to the bone. The balanced composition of Fosbond 22 prevents the highs and lows of ordinary phosphate films, and its superior cleaning power lets you clean and coat in one spray bath.

Shipped as a dry powder in a non-returnable drum, Fosbond 22 simplifies your storage and processing all down the line. In addition, long,

economical bath life and improved corrosion-resistance under organic finishes help Fosbond 22 pay for itself in re-charge savings and lowered reject rate.

TRY IT IN YOUR CYCLE. See how this inexpensive, easily-controlled phosphate system cuts cleaning and coating costs. Where iron phosphate coating is indicated, you just can't match the simple Fosbond 22 process. Ask your Pennsalt representative for a demonstration in your equipment,

or write Metal Processing Dept. 262, Pennsylvania Salt Manufacturing Company, Three Penn Center Plaza, Philadelphia 2, Pa. In Canada: Pennsalt Chemicals of Canada, Hamilton, Ontario.



Metal Cleaners • Phosphate Coatings • Cold-Working Lubricants

A B E T T E R S T A R T F O R Y O U R F I N I S H

Continental Quality Standards Met by **P_D** Paint Finishing Systems



Throughout the entire automotive industry (as in many other fields) quality standards are paramount. In such a competitive field, the finish of products must receive public acceptance. Plant engineers of the Continental Division—Ford Motor Company established extremely exacting standards when planning the set-up and equipment of their new plant. As every one now knows, the Continental Mark II is not a mass-produced automobile. Its manufacture is done under rigid quality controls. In this new plant the limited production of this splendid automobile is handled on a one floor layout where space allotments for finishing operations were most carefully planned. The finishing systems installed here by PETERS-DALTON provide continuous operations through bonderite dry-off ovens, bake ovens, wet sand dry-off ovens, and spray booths with superb air make-up installations. Of course, the P-D Hydro-Whirl Method of cleaning and replacing air is a most important adjunct to smooth and flawless operations.

In whatever your field of manufacture, if you have finishing problems or needs, call upon P-D engineering knowledge. Whether your requirements are for a single spray booth or a complete finishing system, remember—we are exclusively contract manufacturers and can efficiently design, engineer, fabricate, and install the equipment to meet them and—within your space limitations.

We'll be glad to tell you more. Just write, wire or phone.

Representatives in principal cities.



1. All operations on one level, as pictured, include spray booths and air make-up.



2. Sides of booths with wet sand dry-off oven and bonderite dry-off oven.

P_D Hydro-Whirl Paint Spray Booths

P_D Industrial Washing Equipment

P_D Drying and Baking Ovens

P_D Hydro-Whirl Dust Collecting Systems



CHAPMAN PREDICTS 1956 MAJOR ELECTRIC APPLIANCE SALES WILL BE UP 6%

More major electric appliances will be sold in 1956 than in any previous year, and 1957 will be even better, Bernard A. Chapman, vice president and general manager of the Kelvinator Div., American Motors Corp., Detroit, has announced.

He said his firm's estimates, based on industry sources, are that 15,755,000 of the major appliances will be sold in 1956, for a 6% increase over 1955's estimated total of 14,830,000 units.

WAMPLER FORECASTS RISE IN AIR CONDITIONER SALES

Another record sales year will be established by the air conditioning industry in 1956 with a total retail volume of about \$3.2 billion, it was predicted by Cloud Wampler, chairman and president of Carrier Corp., Syracuse, N. Y. By way of comparison, he estimated the industry's 1955 retail sales at \$2.9 billion.

PRE-FAB BUILDING MFR. SEES STRONG DEMAND IN 1956

A continued strong demand through 1956 and beyond for prefabricated types of industrial and farm buildings has been predicted by Peter S. Pedersen, Jr., president of Wonder Building Corp. of America, Chicago manufacturer of trussless, steel prefabricated structures.

Pedersen said that his firm expects to quadruple sales in the next 12 months. Wonder Building sales for 1955 were double those of 1954.

finish FEBRUARY • 1956

TRANE PRESIDENT SEES GOOD YEAR AHEAD

D. C. Minard, president of The Trane Co., La Crosse, Wisc., has announced that the industry's air conditioning sales should rise as much as 15 to 20% in 1956.

AHLMA 11-MONTH FIGURES

Factory sales of home laundry appliances during November totaled 525,748 units, a 16% increase over November 1954, Guenther Baumgart, executive director of the American Home Laundry Manufacturers' Association, has announced.

Cumulative sales for the first 11 months amounted to 5,179,940 units, 27% above the corresponding 1954 period.

RESISTANCE WELDING EQUIPMENT SALES UP

The Resistance Welding Manufacturers' Association predicts that 1955 will show a substantial increase in new orders and a gain in shipments of resistance welding equipment. Shipments for the first 11 months were 8% over the same period in 1954.

OIL BURNER SHIPMENTS UP

The Plumbing and Heating Industries Bureau announced that at the end of the third quarter of this year a total of 602,320 oil burners had been shipped for residential installations, 11% over the same period of 1954.

DEC. KELVINATOR SALES 33% OVER DEC. '54

Walter Jeffrey, vice president in charge of sales, Kelvinator Div., American Motors Corp., Detroit, has announced that billings to dealers for December were 33% higher than the same month a year ago.

NORGE SALES UP \$51,000,000 FROM '54

Sales of Norge appliances in 1955 exceeded \$125,000,000, more than \$51,000,000 ahead of 1954.

Judson S. Sayre, president, Norge Div., Borg-Warner Corp., Chicago, has predicted that sales in 1956 will surpass \$150,000,000. He expects the appliance business to reach record levels

next year, with sales of automatic washers and clothes dryers reaching 5,000,000 units for the first time.

NEMA OCTOBER FIGURES

The National Electrical Manufacturers Association has released the following sales figures for October 1955: electric ranges, 101,370; electric household refrigerators, 216,820; electric storage water heaters, 51,337; electric farm and home freezers, 54,348.

GIBSON REFRIGERATOR SALES TOTAL \$32,853,599 FOR 1955

Net earnings of Gibson Refrigerator Co., Greenville, Mich., in the year ended September 30 totaled \$706,000, compared with \$257,600 in 1954.

Sales were \$32,853,599, compared with \$32,635,408 last year.

CASSIDY HEADS SERVEL APPLIANCE QUALITY CONTROL

Edward J. Cassidy has been appointed director of quality control for the home appliance division of Servel, Inc., Evansville, Ind., announced John H. Wall, executive vice president.

Cassidy had been on special assignments since joining Servel in September from the Glascock Brothers Mfg. Co., Muncie, Ind., where he was director of engineering.

U.S. AIR CONDITIONING TO BUY JORDON REFRIGERATOR

United States Air Conditioning Corp., Minneapolis, has contracted to purchase Jordon Refrigerator Co., Philadelphia, David F. Feinberg, president, has announced.

No changes are planned in the operations or personnel of Jordon, which will be operated as a subsidiary.

BODEM & OBERLY NAMED ADMIRAL VICE PRESIDENTS

It is reported that George A. Bodem has been elected vice president, Electronics Div., and James R. Oberly a vice president, Appliance Div., of Admiral Corp., Chicago.

ARMOUR EXPANSION PLANS

A \$5,000,000 building program has been announced by Dr. Haldon A. Leedy, vice president and director,

Armour Research Foundation of Ill. Institute of Technology. The program calls for the construction of three buildings and substantial additions to two buildings over the next 10 years.

WESTINGHOUSE BACKS FANS WITH FIVE-YEAR WARRANTY

A five-year warranty plan backing all models of Westinghouse electric fans has been announced by C. E. Anderson, manager of the fan department for Westinghouse Portable Appliances, Springfield, Mass.

PEI ARCHITECTURAL CONFERENCE

The Architectural Division of the Porcelain Enamel Institute has announced it will conduct a winter conference on architectural porcelain enamel at the Sheraton Hotel in Chicago on February 8-9.

Managing director, John C. Oliver, has announced that general subjects to be covered at the conference will be progress reports on industry projects being conducted by the division; a panel on curtain wall construction; a "Discussion of Architects' Informational Requirements About Porcelain Enamel"; and a session on "Planning for the Market Ahead".

KELVINATOR APPOINTMENTS

William N. Bauer has been named manager of the marketing department, Erwin G. Bower becomes manager of sales statistics, and Harry J. Commes is manager of the order and distribution department of Kelvinator Div., American Motors Corp., Detroit, announced J. W. Keuping, assistant general sales manager.

NOMINATIONS OPEN FOR DIE CASTING AWARD

Nominations for the Doehler Award have been opened by the American Die Casting Institute, New York City.

The Award is made for outstanding contribution to the advancement of the die casting industry or to the art of die casting.

Nominations and supporting papers or other material will be received until April 15. Entries should be addressed to: Award Committee, American Die Casting Institute, 366 Madison Ave., New York 17, New York.



Vacuum Cleaner Manufacturers—elected officers at their annual meeting in Cleveland on December 2. Members pictured are, front row, left to right: O. M. Mansager, Hoover Co., VCMA president; C. G. Frantz, Apex Electrical Mfg. Co., secretary-treasurer; Richard J. Simmons, Birtman Electric Co., director; Mart Manley, Electrolux Corp., director; H. V. Kornstien, Douglas Mfg. Co., director; Mrs. Elizabeth Murray, assistant secretary; Joseph H. Nuffer and Carl S. Fetzer, Scott & Fetzer Co. Back row, left to right: Alex M. Lewyt, Lewyt Corp.; George Kelly, Douglas Mfg. Co.; Joseph S. Hoover, Hoover Co.; C. P. Kirwan and A. L. McCarthy, Eureka Williams Corp.; John A. Kemper and George H. Scott, Scott & Fetzer Co.; Frank C. Callahan, Health-Mor, Inc.; W. C. Whorley, Douglas Mfg. Co.; and Lee Moss, Landers, Frary & Clark.

MOTOROLA EXPANSION

Motorola, Inc., Chicago, has announced a \$1,000,000 expansion of car radio tuner facilities at Arcade, N.Y. Plans call for a 30,000 square foot, one story addition to the present building. Construction will start in early spring.

LEWYT \$10 MILLION EXPANSION PROGRAM

Three corporations headed by Alex Lewyt will spend \$10 million during the next 5 years in an expansion program. Lewyt announced that the program started in July with the purchase of the Ford Instrument Bldg. in Long Island City.

The three companies, The Lewyt Corp., The Lewyt Air Conditioner Corp., and The Lewyt Mfg. Corp., expect a combined sales volume of \$100 million during 1956.

PERMAGLAS ANNOUNCES '3 MILLIONTH DAY'

In late February or early March the Permaglas Div. of A. O. Smith Corp., Kankakee, Ill., will manufacture its three-millionth water heater. J. H. Brinker, general manager, has announced that Smiths who own or rent homes in the United States and have babies born on that day will be eligible

to receive free a 30-gallon, deluxe "Permaglas" water heater, complete with installation.

Dealers who install the appliances in the Smith homes will get a free water heater of the same model.

NATIONAL ELECTRICAL WEEK BEGINS FEBRUARY 6

The week of February 6 has been selected as National Electrical Week by representatives of the electrical industry. This is Thomas A. Edison's birthday week.

CARRIER NAMES EGGLESTON

Howard N. Eggleston, manager of construction for the Atlanta district office of Carrier Corp., has been appointed national construction manager, announced Charles V. Fenn, vice president, Machinery and Systems Div.

Eggleston will coordinate all field construction and shop fabricating operations.

MULLIGAN TO PEI

Eugene D. Mulligan has been named administrative assistant for the Porcelain Enamel Institute, Washington, D.C., announced John C. Oliver, managing director.

to Page 72 →



When the president of a company gives an order for action—wheels turn and people snap to attention. When you call a Fairmont sales engineer, you get the same prompt action; he knows you have called because you want special action for your own individual product and production line. He'll be thoroughly competent to discuss technical specifications and then give your order the individual attention it needs and follow it through to substantiate our long cherished reputation for quick delivery, highest quality and understanding service.

The 2S and 3S alloys are especially low cost and satisfy a wide range of applications. We can keep them soft, to form easily, or we can harden them

for more rugged service. Highly resistant to atmospheric corrosion, and to many chemicals, this Fairmont aluminum is being used extensively for cooking utensils, chemical equipment, air conditioning and refrigeration equipment, and for various purposes in the building trades.

For over 27 years we have specialized in the production of wrought aluminum sheet to meet customers' exacting requirements, and our modern rolling mill can be geared to *your* quantity needs, be they large or small.

For fast action, high quality and understanding service in aluminum sheet and circles, call our "presidents" at the sales offices listed below.

FAIRMONT ALUMINUM COMPANY

FAIRMONT, WEST VIRGINIA



SALES OFFICES:

Baltimore Buffalo Chicago Cleveland Denver Fairmont Indianapolis
Los Angeles New York City Philadelphia St. Louis Schenectady Seattle

PERMA-VIEW SELLS more new ranges



46 leading stove
manufacturers now
use PERMA-VIEW

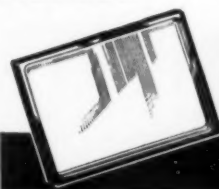
Home makers have come to expect "visible cooking" when they buy a new range. PERMA-VIEW, "the window you can see through always", is the logical answer to this demand.

Forty-six leading range manufacturers are incorporating the steel incased double pane PERMA-VIEW window in their deluxe and volume models as a feature with selling power to move new ranges.

You can take advantage of this sales acceptance, too, by calling on our Engineering Department to adapt its use to your range.

The PERMA-VIEW window is pre-engineered and comes to you ready for immediate installation in your range. "Out of our carton

into your door." Let our specialized production lines serve as a part of your sub-assembly facilities. Phone us at Market 4-2256 and we will give you complete details on the ease and economy of adding this sales feature to your new ranges.

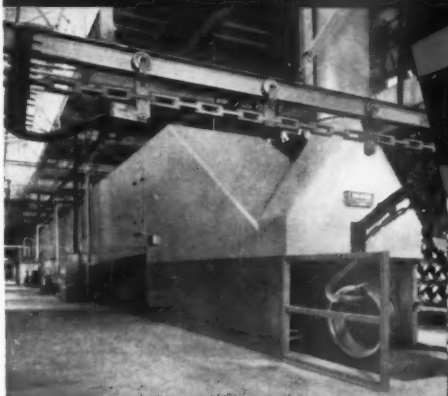


MILLS PRODUCTS INCORPORATED

1015 WEST MAPLE ROAD • WALLED LAKE, MICHIGAN

COMPLETE *Finishing* SYSTEMS

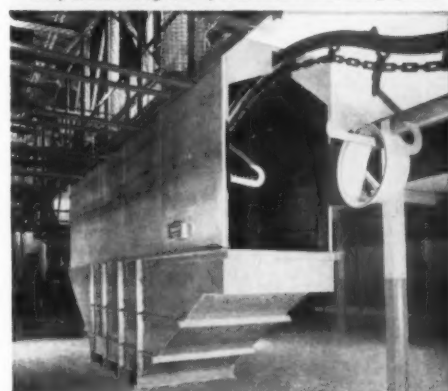
... for ENAMELS • LACQUER • PAINT • VARNISH



Mahon Six-Stage Metal Cleaning and Rust Proofing Machine—part of a Complete Mahon System for Painting Truck Wheel Rims.

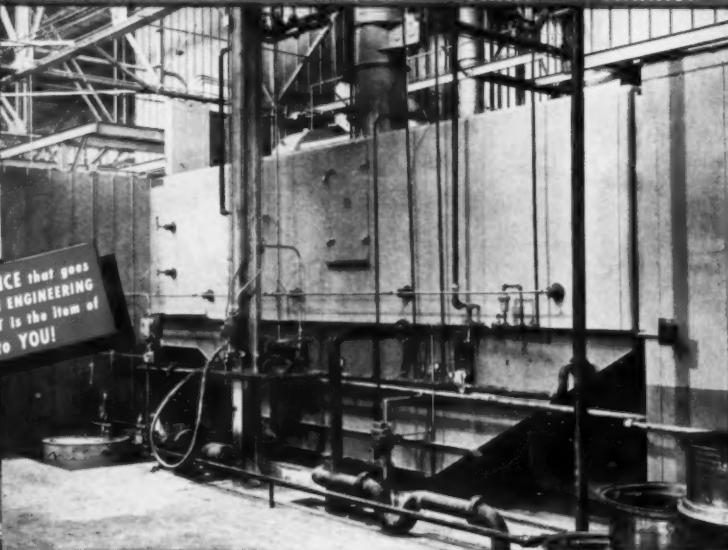


Mahon Overhead Finish Baking Oven with Drip Enclosure and end of Dip Cooler in foreground—part of the same Rim Painting System.



Mahon Dip Cooling Unit designed to expedite cooling of Rims emerging from Finish Baking Oven to handling temperature.

... the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!



Mahon Dip Cooler—part of a Complete Mahon Finishing System for Painting Truck Wheel Rims. Paint Mixer and other facilities are provided to maintain Epon Paint at constant temperature.

Complete Mahon DIP COATING System Finishes Truck Wheel RIMS at MINIMUM COST!

Illustrated here are major units of processing equipment which, with other facilities, make up a Complete Mahon Finishing System designed especially for coating truck wheel rims with Epon Paint. The system includes a Six-Stage Metal Cleaning and Rust Proofing Machine, Cooling Tunnel, Dip Coater, Ventilated Drip Enclosures, Filtered Air Supply System, an Overhead Finish Baking Oven and a Dip Cooler. This is another typical Mahon solution for a manufacturer with a particular finishing job . . . it produces a fine finish in minimum time with a minimum of attention, and at an absolute minimum cost per unit painted. If you have a finishing problem, or are contemplating new finishing equipment, you, too, will find that Mahon engineers are better qualified to advise you on both methods and equipment requirements . . . and better qualified also, to do the all-important planning and engineering of equipment—which is the key to fine finishes at minimum cost. Whether you require a Complete Finishing System for Spray Painting—either Manual or Electrostatic, Flow Coating or Dip Coating, you will find, if you investigate, that Mahon equipment will serve you better . . . because, Mahon equipment is engineered better and built better for more economical operation over a longer period of time. You can rely on Mahon to do the complete job on one contract—undivided responsibility for the entire system insures proper coordination and safeguards you against complications which may upset your production plans and subsequent schedules. See Mahon's Insert in Sweet's Plant Engineering File, or write for Catalog A-656.

THE R. C. MAHON COMPANY • Detroit 34, Michigan
SALES-ENGINEERING OFFICES in DETROIT, NEW YORK and CHICAGO

Engineers and Manufacturers of Complete Finishing Systems—including Metal Cleaning, Pickling and Rust Proofing Equipment, Hydro-Filter Spray Booths, Dip and Flow Coaters, Filtered Air Supply Systems, Drying and Baking Ovens, Cooling Tunnels, Heat Treating and Quenching Equipment for Aluminum and Magnesium, and other Units of Special Production Equipment.

MAHON

NEWS

→ from Page 68

1956 REDESIGN AWARD

Entries for the 1956 John Woodman Higgins Redesign Award are being accepted, according to Harold A. Daschner, managing director of the Pressed Metal Institute, Cleveland.

The annual award which offers a cash prize of \$500 was established last year by Worcester Pressed Steel Co., Worcester, Mass.

Entries for the award are to be sub-

mitted to the John Woodman Higgins Redesign Award, Pressed Metal Institute, 3673 Lee Road, Cleveland 20, Ohio.

WEBER IS RCA MFG. HEAD

It is reported that Arnold K. Weber was named director of manufacturing for Radio Corp. of America, New York City.

HAKIMIAN NAMED PRESIDENT OF NORGE CHICAGO CORP.

Charles Hakimian has been appointed president of Norge Chicago Corp., dis-

tributor of Norge appliances in 21 Illinois and Indiana counties, announced R. C. Connell, vice president of sales of Norge Div., Borg-Warner Corp., Chicago.

SERVEL APPOINTS LAINE

It is reported that Jerry Laine has been named manager, Sales Service Dept. for Servel, Inc., Evansville, Ind.

NAME 3 CROSLY-BENDIX VICE PRESIDENTS

President Chester G. Gifford has announced the appointments of John

*add unrivalled prestige
to your product with*

Electroplated GOLD FINISH

Cost of electroplating gold is fully in line with your other production costs — yet brilliant tarnish-proof gold adds permanent richness and intrinsic value you can achieve no other way.

With no more than mild damp-cloth cleansing, gold finish retains its beauty indefinitely. Besides decoration of elements of household appliances, electroplated gold is recommended as a complete over-all finish for toasters, percolators, clocks, small radios, etc.

Technic Inc. equips you with controlled apparatus and electroplating solutions to maintain exacting standards and close tolerances. We design and install your equipment for electroplating gold without waste — and our engineers stand by until performance is assured. Consult us without obligation, whether in respect to a new installation or an existing system now in use.

Att: DESIGN ENGINEERS

INDUSTRIAL GOLD has unique and diverse properties — physical, thermal, chemical, electrical, optical, corrosion resistant — not found in combination in any other form. One of these properties — or a combination — may do a hitherto "impossible" job for you, or economically replace steps in your present operation. Write for data sheet: "Electroplated Gold"



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THE LARGEST ENTERPRISE OF ITS KIND IN THE WORLD



DONALD B. NASON

JOHN MIHALIC, JR.



Mihalic, Jr., formerly director of manufacturing, and W. R. Lawrence, Jr., formerly general manager, as vice presidents of the Crosley and Bendix Home Appliances Divs. of Aveco Mfg. Corp., Nashville, Tenn. He also announced the vice presidential appointment of Donald B. Nason, director of government products engineering.



Speakers' Table from left to right: W. R. Weaver, Modern Pattern & Plastics, Inc.; Lloyd T. Oye, Rezolin, Inc.; Philip F. Atwood, Neff, Kohlbusch & Bissell; Lin H. Crick, Whirlpool-Seeger Corp.; Clarence H. Hager, Geo. D. Roper Corp.

finishfotos

CHICAGO PRESSED METAL INSTITUTE MEETING plastic tooling is subject for well attended meeting

THE Pressed Metal Institute met on Tuesday, January 10, at the Graemere Hotel, Chicago. Clem Caditz, president of Northern Metal Products, reported that there were 175 men in attendance. Mr. Caditz also stated that the tentative date for the next Chicago PMI meeting is February 7.

"Plastic Tooling for The Metal Stamp-er" was the subject for the evening. The first speaker of the evening was Lloyd T. Oye of Rezolin, Inc., Los Angeles, California. His firm formulates plastics for tooling, and he presented a group of colored slides along with his talk to demonstrate some of the many current uses of plastic tools.

W. R. Weaver, Modern Pattern & Plastics, Inc., Toledo, Ohio, provided the group with information that he has acquired as a builder of plastic dies.

Lin H. Crick, manager of engineering services, Whirlpool-Seeger Corporation, and Clarence H. Hager, master mechanic, George D. Roper Corporation, expressed the manufacturer's viewpoint and presented examples of the successful use of plastic dies.

One advantage in using plastic dies is, of course, the fact that they are normally much cheaper than steel. Even though much of the emphasis during the evening was placed on the fact that plastic dies are now being used for short runs, Mr. Weaver stated that he thinks plastic dies will be used in a very few years on regular runs. It was also pointed out that plastic dies can be used for stainless steel, and that you should use conventional drawing compounds when using plastic dies.

Philip F. Atwood, Neff, Kohlbusch & Bissell, served as panel leader and conducted the question and answer session which followed the four talks.

AIRTEMP EXPANSION PROGRAM

An expansion program which will cost in excess of \$2,000,000 has been announced by the Airtemp Div., Chrysler Corp., Dayton, Ohio.



Burn It!

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**MAKE THIS
BURNING TEST
YOURSELF**



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and get this Ty-
Bonded Test Panel

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A WATER QUENCHED GRANULAR FRIT OF MANY USES

Whatever your product, you'll find applications for this versatile Titanium White Cover Coat Frit that has set standards for color stability.

Superior Acid Resistance
Reduced Black Edging Problem
Practically eliminates chipping
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Available for pastel or strong colors
75-80% reflectance
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Better scratch resistance

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Our Technical Staff and Samples are available to you
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"The World's Most Complete Ceramic Supplier"

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The outlook for steel in 1956

by *W. W. Sebald* • PRESIDENT, ARMCO STEEL CORPORATION

DURING the year 1956 general business throughout the U. S. should continue to be very active, and since that will be true, the steel business will also be good.

At Armco we think the steel industry is almost sure to turn out more steel in 1956 than it did in 1955.

While there may be a less urgent demand for certain consumer durable goods made of steel, there are many indications that steel demand in the capital goods fields will increase. *Spending for new plants and equipment appears to be one of the brightest spots in the business picture.* It is expected that capital expenditures for 1956 will be at least 10% above those in 1955. In our own industry it is estimated that capital expenditures will be about 70% higher than in 1955.

Federal expenditures for national security and other government projects are not likely to be cut back, and may be increased. . . . Money rates will determine how fast these programs will proceed.

Present indications point to the prospect of steel production at substantially full capacity through the first half of 1956. By the third quarter it is possible that the pressure for steel may ease somewhat—due in part to the normal seasonal decline in demand from some consuming industries.

However, if capital expenditures programs move along as predicted, we estimate that steel production *this* year will be somewhere between 115 and 120 million tons of ingots—depending upon inventory accumulations.

Thus, 1956 could bring another new production record for our industry.

The expanding uses of steel along with the development of new and better grades of steel make ours a growth industry.

Last year our total consumption of steel required the production of over

1,400 pounds of steel ingots per capita—an all time high. People's wants are never satisfied, and with the expanding uses of steel and with Americans buying ever increasing quantities of over-the-counter goods made of steel, we at

Armco see a clear pattern of continued growth for our country and our company.

(This statement by Mr. Sebald was made just before the end of 1955. Dates in parenthesis and italicized words are editorial additions.)

CASH for your OLD CONTACT WHEEL TIRES*

TAKE ADVANTAGE OF CHICAGO RUBBER'S
AMAZING NEW POLICY ANNOUNCEMENT

TRADE AND SAVE from nationally advertised prices.

Why use old worn-out tires that don't give efficient operation, slow down production, and increase belt cost. Return your old tires to us prepaid and we will give you 30% trade-in against the purchase price of a tire of like size or larger.

For example, if you wish to trade in a serrated 14 x 3 tire which lists at \$34.00 (less 30% = \$10.20), your price is \$23.80 for a new R 54 COSMO-WHEEL tire.

Compare these prices with any other type of wheel on the market from the viewpoint of quality, production, and life. Your old tire will be replaced with the same high grade quality rubber used in all Chicago Rubber Wheels.

Your original investment, as per the above example, is \$34.00 but think of your replacement costs.

As always, Chicago Rubber Company stands behind their products.

*This offer applies only to the R54 COSMOWHEEL Demountable Tires. Subject to withdrawal without notice.



CHICAGO RUBBER COMPANY, INC.

2620 N. CLYBOURN AVE. • CHICAGO 14, ILL.

DEPT. C F



Embarrassed? Man, I could cry!

"One day the Detrex man mentioned that metal cleaning and surface preparation represented from $\frac{1}{4}$ to $\frac{1}{3}$ of the operations in most metalworking plants. Well sir, I just didn't believe him and took a count to prove him wrong—only I didn't! In fact when I think of the money I lost because I paid so little attention to the importance of these operations, I could really cry.

"In our plant over a quarter of the operations performed fell into one of these two categories. As a result, this metal cleaning business represents big money to us every year—even small savings on each operation represents mighty big savings overall. And mister, Detrex cut our costs on nearly every one.

"Take our phosphate coating operations prior to painting as an example. Detrex Paintbond* is saving us hun-

dreds of dollars per year because it goes so much further. At the same time Paintbond gives us a finer crystalline coating and thus a smoother, more lustrous paint finish. Salt-spray tests? . . . better than ever.

"If you've never stopped to count the number of metal cleaning and surface treatment operations in your plant (or the money you might save on them) chances are you'll be shocked.

"Tell you what—the Detrex man in your territory will make the same kind of a survey in your plant. Why not give him a crack at it? You don't owe him a plugged nickel if he doesn't prove his point. What if he does?, you ask. Then he'll sell some chemicals and/or equipment and you'll save BIG dollars. How about giving it a whirl, today? You have everything to gain, nothing to lose."



*Above is shown the attractive three-color label which Detrex provides to users for application on finished products. At point-of-purchase, this label tells your customers that your product has a durable finish that will give a life time of pleasure. It's an added sales clincher every time.

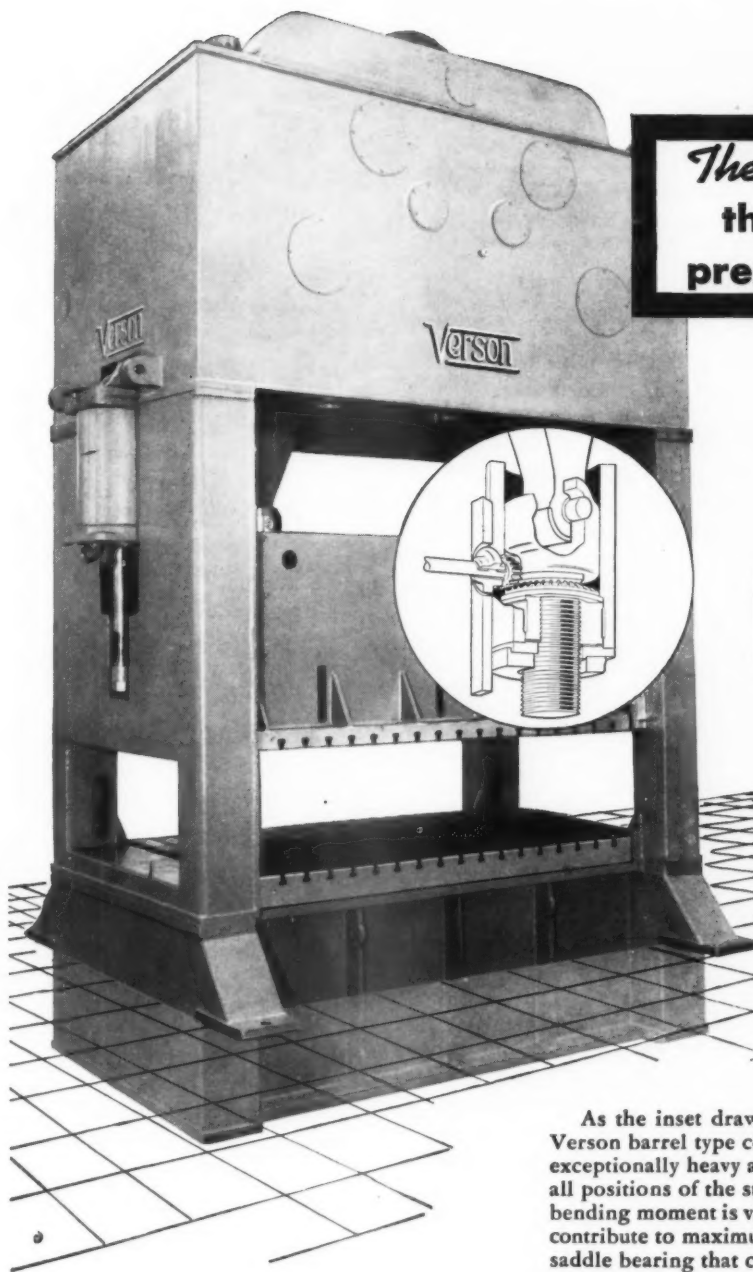
Service with a Saving!



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DEGREASERS • DEGREASING SOLVENTS • WASHERS
ALKALI & EMULSION CLEANERS • DRYCLEANING
EQUIPMENT • PHOSPHATE COATING PROCESSES



*These are the features
that make **Verson**
presses your best buy*

**Heavy Duty
barrel type adjustable
connections of**

***Verson* PRESSES**

**assure long life and
easily maintained
accuracy**

As the inset drawing above shows, the adjusting screw of Verson barrel type connections is completely confined by an exceptionally heavy and rigid guide. The screw is vertical at all positions of the stroke and does not oscillate. As a result, bending moment is virtually eliminated. Buttress threads further contribute to maximum life and safety. Note, too, the heavy saddle bearing that carries the entire load. The wrist pin serves only as a means of returning the slide to stroke up position.

Adjustment can be manual or motorized. In either event, the extra long adjusting screw provides exceptionally liberal adjustment.

This is another example of the kind of engineering that has won for Verson presses their reputation for quality. For you, it all adds up to better stampings at lower cost. Whether you require a single press or an entire stamping plant complete with tooling, we'll be pleased to make recommendations.

Catalog G-53 presents basic data on the entire Verson line. Write for your copy, today. It may be the first step towards the more efficient production of stampings.

Verson Press for every job from 60 tons up.



ORIGINATORS AND PIONEERS OF ALLSTEEL STAMPING PRESS CONSTRUCTION

VERSON ALLSTEEL PRESS CO.

9320 S. KENWOOD AVENUE, CHICAGO 19, ILLINOIS • 50. LAMAR AT LEDBETTER DRIVE, DALLAS, TEXAS

MECHANICAL AND HYDRAULIC PRESSES AND PRESS BRAKES • TRANSMAT PRESSES • TOOLING • DIE CUSHIONS • Verson-WHEELON HYDRAULIC PRESSES

Supplies and Equipment

B-10. Timer for riveting machines

New

A synchronous-motor automatic timer has been added to a certain type of riveting machine. The timer, combined with the adjustable impact and elevating anvil features of the riveting machines, makes it possible to rivet all materials considered impractical to rivet due to their fragile nature or the danger of distortion, according to the manufacturer. The timer controls the exact length of time of the riveting or plaining blows of the hammer. It is delivered complete, with necessary fittings, cables and 10-foot cord. It operates on 115-volt 60-cycle AC only.

B-11. Graduated siphon cup

New

New graduated siphon cups have stamped graduations which are clearly visible on the inside and outside. The markings show fluid levels for ratios of 1-to-1, 2-to-1 and



3-to-1, as well as a mark for the one-quart level. The base of the cup's spun aluminum body is protected by a steel reinforced rim. The large open top, plus the well-rounded graduations on the inside, simplify cleaning. It can be used with all types of spray guns. Cup attachments are available for $\frac{1}{4}$ and $\frac{3}{8}$ inch standard pipe thread fluid connections and for $\frac{9}{16}$ inch 20 connections.

B-12. Liquid buffing compound cleaner

New

A water-soluble liquid cleaner to remove all types of buffing compound from all ferrous and non-ferrous metals, has been released. The cleaner is mildly alkaline but is not a

More Information

For more information on new supplies, equipment and literature reviewed here, fill out the order form or write to us on your company stationery.

conventional alkaline cleaner or solvent. It is non-toxic and non-flammable. Tank make-up calls for two gallons of the cleaner in 98 gallons of water. Working temperature is 170°F. Minimum immersion time is about three minutes. When buffing compound removal precedes further handling, a conventional spray-rinse after immersion in the cleaner is sufficient to remove loosened sediment from inaccessible areas. The cleaner can be used successfully in hard water. It is effective on zinc base die castings, aluminum, brass, copper and steel.

B-13. Nylon stop nut

New

A new nylon stop nut is a one-piece, washer-faced, resilient hexagon which is simultaneously self-tapping, locking and insulating. According to the manufacturer, it is molded to American Standard Flats Widths Dimensions for use with standard installation and removal tools. A new design principle reportedly aligns the screw in the hole, holding it tightly against vibration. Stocked in natural nylon color, it is also available in other colors. Special features are said to be toughness, extreme light weight, strength in thin sections and outstanding resistance.

B-14. New finishing paper

New

A finishing paper is now available in Crystolon (R) for the automotive and appliance industries in grits 240, 280 and 320. It contains a special rubber base incorporated by a paper treating process which prevents "slipping" in the operator's hands. It is said to be easy on the operator's hands too because he no longer has to press down on sheets while sanding and obtaining a smooth finish. It has a

"non-filling" surface coating which won't come off when moistened or during sanding.

B-15. Strippable plastic coating

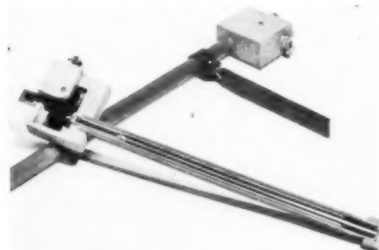
New

A new strippable plastic coating that protects smooth or highly polished surfaces during fabrication, handling and storage has been introduced. It is sprayed on and quickly dries to a tough, clear film that is said to withstand all manufacturing operations and shipping and protects against scratches, rust, oil, etc. When it is peeled off, the product emerges factory fresh. It has a tensile strength of more than 2500 lbs. per sq. inch and an elongation up to 200%. It can be sprayed on stainless steel, glass, vitreous enamel, chrome, nickel, decorative laminates and plated surfaces. It is also available in consistencies for brushing or dipping.

B-16. Temperature regulator for plating baths

New

A new low cost temperature regulator for plating baths, impervious to plating acid deterioration, has been introduced. Called the Eltemp, its body is constructed of an acid-proof, temperature-sensitive thermoplastic. The Eltemp automatically regulates the operation of heating or cooling sources to a



temperature tolerance of within plus or minus one degree in a constant solution level. An accurate average-depth tank temperature is produced by the long thermal tube which extends deep into the plating solution and compensates for temperature changes wherever they occur. The Eltemp needs little maintenance and is guaranteed by the manufacturer for one year.



Industrial Literature

210. Booklet on sink frames

New A four-page color booklet on sink frames contains several illustrations and descriptive information. The sink frames fit all flat rim sinks and are available in stainless steel or aluminum. It lists outstanding features and tells how the frames are installed. A price list is included.

211. Industrial paint finish

New A custom-formulated industrial paint finish for use on any metal product is highlighted in a brochure. Highly illustrated, the 20-page brochure displays a wide range of finished consumer products including: automatic washers and dryers, ironers, steel kitchen cabinets, water heaters, small appliances and a host of other metal-made products. This is a customized finished especially formulated to meet the requirements of different manufacturing processes and to satisfy the specific resistance factors demanded by the end product. By slightly varying the basic formula a wide range of coatings can be formulated which may be applied by automatic or manual spray, dip or flow coat, or by electrostatic spray methods.

212. 1956 silicone reference guide

New The new edition of this silicone reference guide describes almost 150 of the most generally used silicone products. The products are grouped by physical form (fluids, compounds, etc.) and cross-indexed by usage (dielectrics, defoamers, etc.). Product descriptions are condensed and devoted to essential data. Thoroughly illustrated with charts, tables, graphs and application photographs, it contains twelve pages.

213. Flow coating booklet

New The booklet entitled "What Is Flowcoating?" describes the operation of flowcoating equipment along with technical data and illustrations.

214. Chemical supply catalog

New A chemical supply firm offers a complete catalog outlining their products.

215. Free panel sample

New A company is offering a sample panel which has been zinc-phosphate coated. Under test it will not crack, chip or peel. It is pointed out by the manufacturer that the coating becomes a part of the metal it coats and helps paint or other finishes stick.

216. Testing equipment brochure

New This testing equipment brochure provides detailed descriptions and illustrations of a complete line of NST-approved packaging testing equipment.

217. What to expect from wirebounds

New This booklet of general application provides information on various types of wirebound boxes. It points out advantages of this type of container and examples of products for which they can be used.

218. Wall systems of . . . aluminum

New This new booklet is said to contain the latest information

on curtain wall systems, design considerations and colored finishes. Also included are specification suggestions for using colored aluminum.

219. "A Better Bond . . . For Organic Finishes"

New This pamphlet describes in detail a complete line of phosphating compounds. In addition to a general discussion of phosphating, metal treatment prior to painting and metal treatment prior to other organic finishing, the brochure includes a "Phosphating Reference Chart". This chart outlines the purpose of each material, the recommended uses, government specifications met, methods of application, equipment requirements, metals to be used on, coating weights and complete operation cycle.

220. Booklet on shipping containers

New This 24-page, illustrated booklet contains basic facts on shipping containers and shipping information. It explains a free service whereby shipping containers can be tested to see if they can be made safer, and whether shipping costs can be cut and to what extent. It also describes how containers are made and tested.

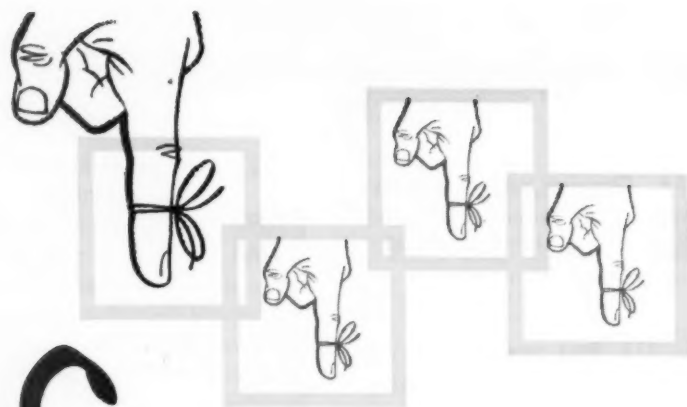
221. Bulletin on magnetic separators

New This bulletin contains complete information on magnetic separators. It explains how they are made and operate, and how they are installed. It also gives facts on cleaning and maintenance.

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Production tripled on toy parts by stamping from pre-coated coil

HERE is "Jolly Jack in the Music Box." The toy plays music and features a surprise-action, pop-up clown.

Mattel, Inc., a Los Angeles toy-maker, produces about 1,250,000 Jolly Jacks annually. Mattel found that fabricating the box top and bottom from pre-coated steel coil allowed the company to triple production of these parts and save \$5,000 in labor costs the first year the material was used.

Before the changeover to pre-coated coil, Mattel used lithographed metal sheets, 30 by 28 inches, which were sheared into four inch wide strips. The strips were stacked and then transported from the shear to the press where they were fed individually.

Scrap allowance was 2 inches for every 30-inch strip, or about seven percent. Additional loss was suffered because of damage when stacking and transporting strip from shear to press.

By contrast, the pre-coated metal coil is fed directly into the press through an automatic feed. This automatic feature accounts for the 200 percent increase in production



Here box tops are being stamped out from blue-painted coil, fed automatically to the press. Production was boosted by 200 percent.

A Los Angeles toy-maker, found a way to boost production and save \$5000 at the same time in making "Jolly Jack in the Music Box."

rate and the \$5,000 savings in labor cost. Scrap loss, limited to end of long coils, is negligible.

The steel coil, when purchased, is slit to the exact width — four inches — required for the operation. The stock is .014 of an inch thick and coated on one side with blue paint. While the tops and bottoms of the music box are metal covered with this

color, the sides are of cardboard decorated with gay, four-color, lithographed circus figures.

Where fabricators have been marketing uncoated metal parts to hold down costs, the use of colorful pre-finished metal and pre-plated metal offers an opportunity to stimulate sales without adding greatly to production costs.

zinc plating solutions

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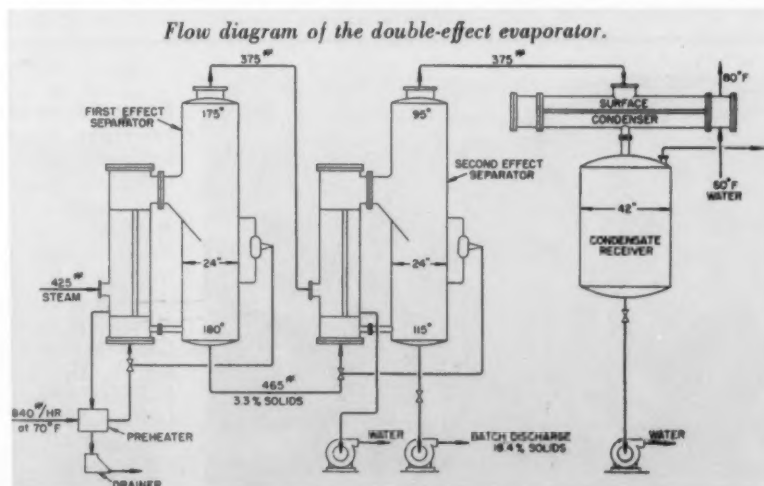
plating tanks and has a maximum capacity of 160 lb. of sodium cyanide per day.

If the cyanide were disposed of by chlorination the cost of chemicals alone would be about 60 cents per pound of sodium cyanide destroyed. To this must be added the cost of replacing the loss of sodium cyanide, zinc and sodium hydroxide. In chlorinating cyanide wastes the principal cost is for chlorine and sodium hydroxide, rather than for cyanide destroyed.

As important as the greater economies provided by the recovery system to Channel Master Corporation is the fact that no cyanide is dis-

charged to waste when the evaporator is used, thus eliminating all possi-

bility of stream pollution and meeting the requirements of the law.



NEWS about Suppliers

BATTLE RETIRES AS HARPER-WYMAN GENERAL MGR.

Leslie C. Battle has retired as general manager and secretary-treasurer of Harper-Wyman Co., Chicago, after 23 years of service, the company announced.

FERRO SALES APPTS.

Edward C. Davidson has been appointed to the newly created position of Eastern regional sales manager, in the Frit and Glaze Div., Ferro Corp., announced Donald R. Goetchius, manager ceramic sales.

Taking over as Cleveland district manager is Robert H. McCaffrey. Charles H. Thomas was named district manager of the Cincinnati district.

U. S. STAMPING NAMES ROBINSON EXECUTIVE VP

E. M. Robinson has been elected executive vice president of United States Stamping Co., Moundsville, W. Va., the company announced.

ROBERTSHAW-FULTON EXECUTIVE CHANGES

John A. Robertshaw, president, Robertshaw-Fulton Controls Co., has announced the following executive changes: Woodford D. Miller, vice president and general manager, Robertshaw Thermostat Div., has been made executive vice president - eastern operations; Frank H.

Post, assistant vice president, succeeds Miller as vice president and general manager, Robertshaw Thermostat Div.; George Mertz has been appointed assistant to Post; Jean V. Giesler is retiring as executive vice president of the parent company and is succeeded by Freeman G. Cross, vice president.

NEW SHELL CHEMICAL PLANT

Shell Chemical Corp., N. Y., will build a methyl ethyl ketone plant at Norco, La., with a capacity of 40,000,000 pounds a year. The plant will begin producing in early 1957, according to R. C. McCurdy, president.

CARBORUNDUM APPOINTS JOHNSON AND WADE

Boyd Johnson, general manager of the Refractories Div., The Carborundum Co., Perth Amboy, N.J., has been elected vice president, announced General Clinton F. Robinson, president.

J. William Wade, formerly sales and advertising executive, Spirella Co., Inc., has been appointed assistant to the manager of the advertising branch, announced Burchard M. Day, advertising manager.

ARMCO 55-YEAR PIN PRESENTED

James C. Miller, retired vice president, Armco Steel Corp., Middletown, Ohio, has been presented a 55-year pin

by C. H. Murray, vice president of personal and public relations, R. S. Gruver, administrative vice president, and F. H. Fanning, vice president in charge of operations.

GENERAL CERAMICS SALES MGR.

John P. Manley has been named sales manager of the General Ceramics Corp., Keasbey, N.J.

FRENCH VISITOR TOURS DEVILBISS PLANT

Charles Lucet, Minister Plenipotentiary of the French Republic to the United States, while visiting Toledo, Ohio, in November, for the opening of the Gal-



lery of French Paintings by the Toledo Museum of Art, made a plant tour of The Devilbiss Co.

He expressed interest in the extent to which paints and protective coatings were spray applied in the United States and paid tribute to the quality of American finishes.

OPEN PIT OPERATIONS BEGIN AT BORON MINE

Start of open pit mining, major step in the \$18,000,000 development of the world's only known sodium borate deposit, went into effect recently at Boron, Calif.

J. M. Gerstley, president, Pacific Coast Borax Co., division of Borax Consolidated, Limited, said the project, including construction of new refining and concentrating plants, is expected to be completed next year.

PITTSBURGH PLATE AID TO EDUCATION PROGRAM

An aid-to-education program totaling \$462,000 has been approved by the Pittsburgh Plate Glass Foundation.



Ground breaking ceremony — marks beginning of \$500,000 plant expansion at Industrial Filter & Pump, Chicago. Participating are, from left to right, Anton Mourek, A. E. MacQuilkin, S. C. Clements, Hans Jensen, J. C. Hesler, R. E. Liedberg, R. F. Ledford, G. Lundberg and C. Lundberg.



W. S. HUSS



J. G. BUCUSS



R. M. THOMPSON



J. M. GERSTLEY



T. W. REGAN



A. J. DE WOLF

HUSS NAMED ACME STEEL PRODUCTS PRESIDENT

Appointment of W. Sheridan Huss as president of Acme Steel Products Div., Acme Steel Co., Chicago, has been announced by G. Findley Griffiths, vice president in charge of sales.

Huss succeeds John G. Bucuss who will continue in an advisory capacity.

TWO TO WYANDOTTE BOARD

Ford Ballantyne, Jr., vice president and general manager of the J. B. Ford Div., Wyandotte Chemicals Corp., and Bert Cremers, vice president and general manager of the Michigan Alkali Div., have been elected to the board of directors.

DEWOLF ELECTED PRESIDENT OF DREIS & KRUMP

The board of directors of Dreis & Krump Mfg. Co., Chicago, has elected A. J. DeWolf president and treasurer of the company. He succeeds his father-in-law, Walter H. Dreis, who died in December. DeWolf, who has been with

the company since 1945, was formerly vice president and general sales manager.

THOMPSON TO AMERICAN ROCK WOOL SALES POST

Ralph M. Thompson, formerly district manager, Owens-Corning Fiberglas, has been appointed manager of industrial sales for American Rock Wool Corp., Chicago, announced George Sudlow, vice president. He succeeds E. E. Wood, Jr., who has retired.

DU PONT TO GIVE \$900,000 IN EDUCATIONAL GRANTS

A fund of more than \$900,000 for grants to over 100 universities and colleges in its annual program of aid to education has been announced by the du Pont Co., Wilmington, Del.

REGAN TO GENERAL BOX BOARD

T. W. Regan, vice president and sales manager of General Box Co., Desplaines, Ill., has been elected a director of the company, it was announced by J. A. Cragwall, president.

ARMCO 'IRON MAN' SAFETY AWARD TO MIDDLETOWN WORKS

Armco Steel Corp.'s "Iron Man", safety trophy, has been awarded to the company's Middletown, Ohio, Works for the best company-wide safety record in 1955, vice president C. H. Murray announced.

KAISER ALUMINUM EXPANSION

Kaiser Aluminum & Chemical Corp., Oakland, Calif., has announced a \$280,000,000 expansion program that will bring the company's total primary aluminum capacity up to 654,000 tons per year.

NORTHWEST CHEMICAL COMPLETES EXPANSION

Northwest Chemical Co., Detroit, has completed a major expansion of its Detroit home office and plant facilities, according to H. J. McCracken, president and one of the founders.

The increased space more than doubles the laboratory and research departments.

Ferro Bob Weaver Award—is presented annually for "a significant employee contribution to the company's success". Bob Weaver, board chairman, second from right, stands with the 1955 recipients, from left to right, Eugene Nobles, William Church, Jr., Paul Gruber and Harold P. Connare.



25-year service watches—have been awarded to three Wyandotte Chemicals J. B. Ford Div. sales representatives. They are, front row, left to right, Harry A. Conroy, Roy M. Barnes and Emil Haas. Congratulating the new watch wearers were, back row, Fred Tholen and Ford Ballantyne, Jr.





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Follansbee, W. Va.

What the manufacturers say about built-ins

→ from Page 59

open kitchens — which can now be combined with activity or dining rooms because of the flexibility of the new units.

"Home builders found the built-ins the 'extra' they needed to clinch their new home sales. From all over the nation came reports of the success of the built-in kitchens in attracting new home buyers."

Julius Klein
President

(The Caloric built-ins, according to Harold Tiley, Caloric General Sales Manager, are available in bright or satin metal finish; in pastel yellow, blue, pink or green, or in black and white porcelain, or coppertone.)

HOTPOINT CO.

To finish:

"We at Hotpoint believe that built-in appliances have a great future. We are at present producing built-in ranges with a brushed chrome exterior, a built-in refrigerator with the same exterior, and a built-in dishwasher also of brushed chrome.

"At the present time, built-in ranges represent better than 10% of the total range industry shipments, and in the case of Hotpoint, this figure is even higher. . . ."

John F. McDaniel
Manager, Range and
Component Parts Dept.

NEWS

\$25,000 DESIGN CONTEST

A \$25,000 contest to bring forth new design and construction ideas for aluminum curtain wall buildings has been announced by Aluminum Co. of America, Pittsburgh. Co-sponsored by Alcoa and the National Association of Architectural Metal Manufacturers, it is open to architects, designers, architectural draftsmen and students in the U. S. and Canada.

DIE CASTERS' W. MICH. CHAPTER

A new chapter of The Society of Die Casting Engineers was officially formed when the western Michigan group was awarded a charter at a recent meeting held in Grand Rapids, Mich.

New Industry Developments

PRE-ENAMELING PROCESS FOR PORCELAIN ENAMELED ALUMINUM

PORCELAIN enameled aluminum for the architectural and appliance fields should take a big step toward wider usage with the development of a time and cost-cutting pre-enameled process just announced by Aluminum Company of America.

Known as the Alcoa R-100 Process, the chemical treatment is said to be simple, inexpensive and well suited to a continuous enameling operation. The new conditioning treatment will eliminate multiple chemical baths and the pre-firing operation, formerly recommended to insure controlled surface conditions.

When applied to aluminum, the process is reported to produce a uniform, conditioned surface in one step. The metal is then ready to accept a porcelain coating. Alcoa says the process has passed all known laboratory tests and substantial savings in manufacturing costs are anticipated from its use.

The process is the result of several years of research. It is expected to enhance the use of colorful porcelain enameled aluminum on buildings and elsewhere.

Additional information may be obtained by writing to finish on your company letterhead.

NEW MOTOR DESIGNED FOR HOME APPLIANCES

A NEW fractional horsepower motor, believed to be the first ever designed specifically for use on washers,

dryers, food waste disposers, dishwashers, and ironers has been announced by the General Electric Company's Ap-

pliance Motor Department. Although completely interchangeable electrically and mechanically with the former design, the motor is 24 per cent lighter, more compact, and ventilated by five times more air through the windings, according to department engineers. A new insulation system utilizing both Formex* insulated wire and Mylar** polyester film slot insulation, is said to have 3500 per cent more moisture resistance and 800 per cent more physical strength than conventional paper and varnish insulation systems. Additional protection against burn-out of start windings, due to high starting current, on resistance split-phase models, is provided by the use of glass insulated wire.

Bearing life designed to exceed the life of the appliance is the result of a sealed-in, factory-lubricated bearing system, which also protects against the entrance of moisture and dirt. Cast-in bearing alignment eliminates separately machined housings, for smooth, quiet operation. A special oil-retention system for vertical shaft-up mounting protects the motor against over-oiling but recirculates oil for complete lubrication.

Department engineers also pointed out that connecting leads on the motor when it is installed, ordinarily one of the most time-consuming production steps, has been considerably simplified by a 64 per cent increase in hook-up space on the terminal board. As a safeguard against faulty installation, all pertinent motor identification data is die-cast into the endshield near the terminal board.

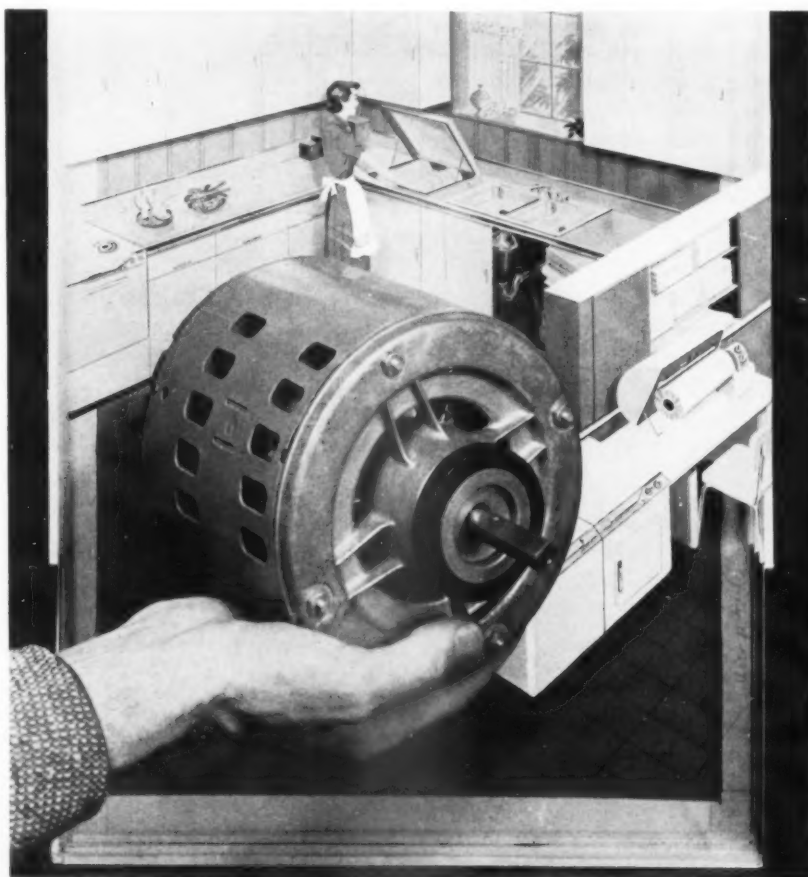
*General Electric trademark * **DuPont trademark

CONTINUOUS ALUMINUM MELTING FURNACE

A NEW method of melting aluminum alloys for casting is giving Monarch Aluminum Mfg. Co. of Cleveland, Ohio, superior working conditions, reduced foundry overheads and a closer control on metal handling and casting quality, at a substantial saving in fuel costs.

The new furnace design employs the gradation heating principle: the use of radiant gas burners operating at high temperatures to effect fast, controlled heat transfer. Ingots are loaded at the upper end, and automatically pushed lengthwise under radiant burners. The melting rate and the pouring tempera-

to Page 87 →



Clay free porcelain enamel slips

(Continued from Page 45)

of colloidal silica in ground coat enamels or in enamels for aluminum has not been thoroughly evaluated. Bisque strength of the colloidal silica enamels is another property to be investigated. The separation of the fired enamel at the identification marks and pin marks was greater for the colloidal silica enamels compared to the enamels using clay, and this may be indicative of poorer bisque strength for colloidal silica enamels.

Uses for colloidal silica

Although clay performs a very satisfactory job as a suspending material, the elimination of the clay from the enamel slip is often desired for several reasons. It is known that clay introduces a bubble structure to the fired enamel coating. Often, this is undesirable since abrasion resistance, strength and protectiveness may be lowered by bubbles in the coating. Clay as a mill addition also is known to affect acid resistance of the fired enamel. The greater the amount of clay used in the mill, the lower the acid resistance.

Clay also affects enamel fluidity. Considered as a refractory material, clay decreases enamel fluidity. The greater the percentage of clay used as a mill addition, the higher the firing temperature of the enamel. Furthermore, clay is one of the few natural-

occurring materials still being used for porcelain enamel cover coats. With the use of manufactured chemicals, greater control can be exercised on impurities and their attendant effects on the color of the fired enamel.

The use of colloidal silica as a suspending agent shows promise with respect to the fired enamel properties thus far investigated. Low temperature enamels need a suspending agent other than the refractory clay mill addition. With aluminum enamels, at present, clay mill additions cannot successfully be used, since such additions raise the firing temperature of the aluminum enamel beyond the practical range. Furthermore, fine-grinding is necessitated with some present substitutes for clay, and fine-grinding usually leads to tearing defect problems. There are other factors that must be considered with some substitutes for clay as a frit-suspending material. The highly alkaline nature of some suspending agents used instead of clay requires caution in handling or dipping with such enamels. Organic suspending agents decompose to form blisters and excessive bubble structure in low temperature enamels.

Colloidal silica as a suspending agent warrants further investigation in these areas, as it has indicated some interesting and useful characteristics from which porcelain enamels may benefit.

College with degrees both in Ceramic Engineering and Mechanical Engineering and is a registered professional engineer with the state of Illinois. Mr. Roberts joined the research staff of Crane Company to establish a Ceramic or Nonmetallic Section. Later, he was assigned to the Metallurgical Section. In recent years he has been supervising engineer in charge of the Ceramic Section.

All of the men listed are members of important technical societies and are credited with the authorship of important contributions to the literature. It would seem that this important ASTM committee is in excellent hands.

Committee C-22 on Porcelain Enamel, American Society for Testing Materials, will meet on Wednesday, February 29, and Thursday, March 1, 1956, at the Hotel Statler, Buffalo, New York. The biennial election of officers is scheduled for this meeting.

U. S. STEEL EXPANSION

United States Steel, Chicago, has announced that it will install a complete new line for the production of USS vitrenamel sheets and other special sheet products at its Irvin Works, Dravosburg, Pa.

First phase of the expansion will be the erection of a new building 600 feet long and 80 feet wide to house the continuous line and auxiliary equipment.

The men behind ASTM committee C-22

(Continued from Page 43)

he was associated with the National Bureau of Standards, Washington.

John T. Roberts, Supervising Engi-

neer of the Crane Company, is a member of the Executive Subcommittee. Mr.

Roberts is a graduate from Iowa State

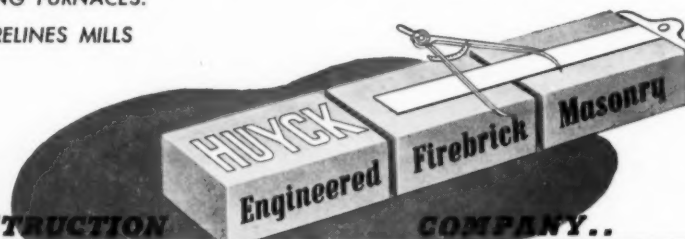
TRANE PLANT ADDITIONS

Two new additions totaling 90,800 square feet are being added to The Trane Co.'s La Crosse, Wis., plant 4, and another 30,000 square feet is under construction at its Scranton, Pa., plant.

HUYCK FURNISHES FIREBRICK MASONRY TO BUILD, REBUILD AND REPAIR ALL TYPES OF: ENAMELING FURNACES . . . FRIT SMELTERS . . . ALUMINUM, BRASS, LEAD SMELTERS . . . FORGE FURNACES . . . HEAT TREATING FURNACES.

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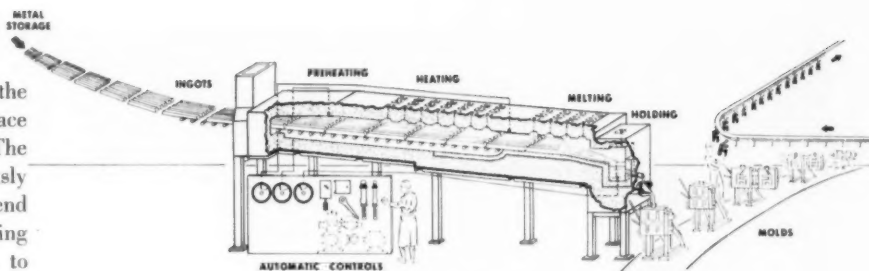
→ from Page 85

ture are controlled by regulating the speed of the ingots through the furnace and the fuel input to the burners. The molten aluminum flows continuously through an opening near the lower end of the furnace, directly into a pouring ladle. This cycle from cold ingot to liquid takes but 24 to 30 minutes.

Gradation heating consists of feeding natural gas and air in accurately controlled proportions and under controlled pressure to the burners. The mixture is burned within each burner cup, heating the ceramic lining to incandescence. Heat transfer occurs between the cup and the aluminum charge, largely by radiation, bringing the aluminum quickly to the melting point.

Sixty burners, 4 rows of fifteen, are patterned to provide a radiant roof 10 feet long and 3 feet wide over the final 1/3 of ingot travel. Combustion products provide preheat during the first 2/3 of ingot travel, and may offer some atmosphere control.

Since there is no aluminum in the



Drawing of continuous aluminum melting furnace.

furnace in a fully liquid state except in the immediate vicinity of the pour point, there is little chance for the formation of oxides. Each ingot, however, is fed into the furnace already covered with an oxide coating. This coating does not melt, but is moved down to the lowest point of the furnace, outside of the operating region. The furnace operator can remove the collected oxide films from time to time, whenever convenient.

Operation of the continuous melting furnace is simple. Quality control has proven to be one of the major advantages of the continuous melting furnace. Castings are of the same analysis as the ingots they are poured from and are

reproducibly uniform from casting to casting. Another advantage, say Monarch executives, is the cooler working conditions which eliminate the summer drop in production due to high temperatures in the working areas of the casting room.

Development of this furnace by Monarch in cooperation with Selas Corp. of America is one of the typical advancements in manufacturing processes by companies serving the appliance and fabricated metal products field.

Additional information may be obtained by writing to *finish* on your company letterhead.



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In our finishing department we have automatic conveyor lines; straight through, hairpin and box furnaces, all electrically fired. Excellent shipping facilities including 10 car RR siding. Well rated company in the best location in the nation.

Let us quote on all of your porcelain enameling, or on short runs to pick up your peak loads. No obligation.

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MANUFACTURING & INSTALLING OF



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SYSTEMS

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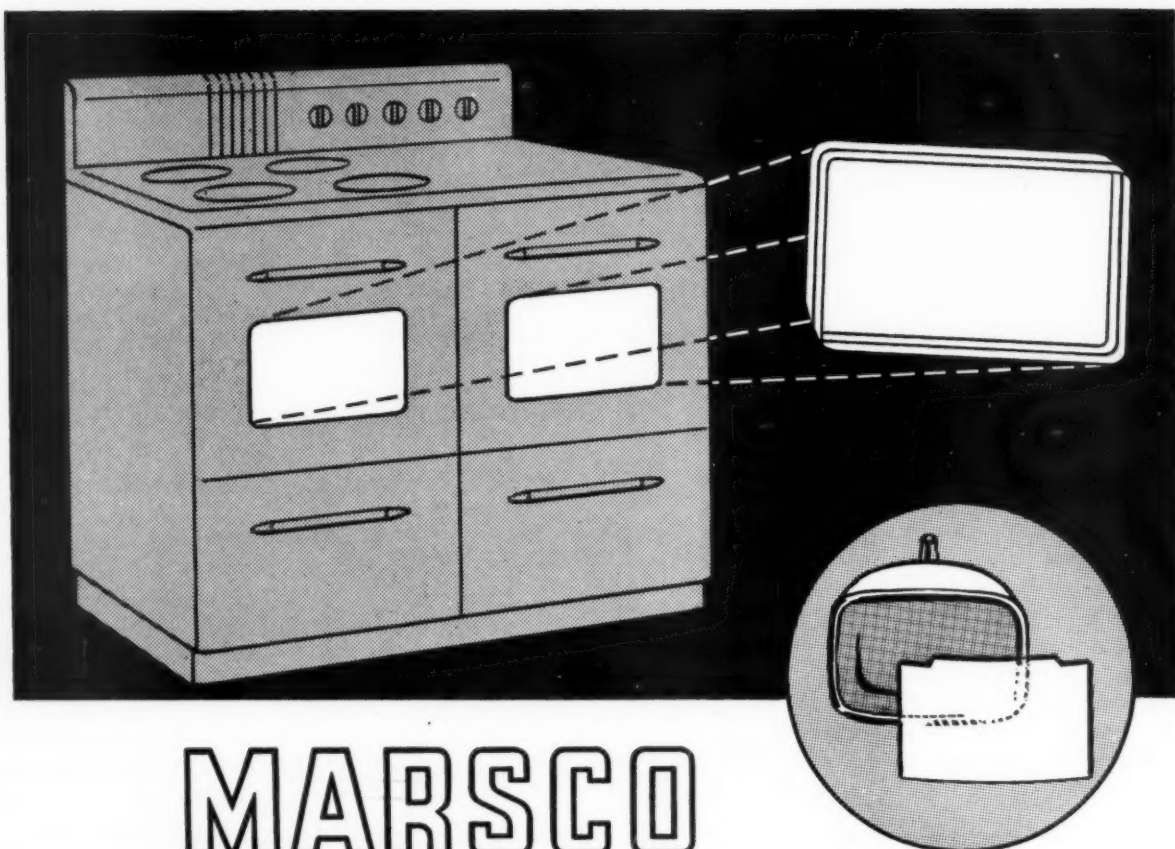
- DETROIT DIVISION
- GRAND RAPIDS DIVISION
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MARSCO

precision glass parts

FOR UTILITY AND BEAUTY

Glass — enhances the beauty and broadens the acceptance of your product whether in the utility appliance field or the growing electronic industry.

Glass — adapted with skill and precision by MARSCO to meet your product requirements — For Today — For Tomorrow.

Glass — flat as can be — precisely shaped to fit.

Glass — bent—convex—drilled—to the most exacting tolerance.

Glass — hardened, heat-treated or tempered to survive your consumer usage unscathed.

Join the major appliance manufacturers now enjoying extra sales from the appeal and prestige contributed thru the luster of glass — MARSCO'S Crystal Clear Glass.

Our engineers are experienced in incorporating glass as viewing windows in domestic appliances and television cabinets.

A simple request to us solves your problem.



Bent Glass




Convex Glass



Heat-treated Glass



MARSCO MFG. CO., 2909 S. HALSTED ST., CHICAGO 8, ILL.



February • 1956

safe transit

FROM ASSEMBLY LINE TO FINAL CUSTOMER



Wirebound
Nailed or Hinge Corner
Cleated Plywood
Cleated Craveneer
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes



FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE



Sending your crated product through the Chicago Mill and Lumber Company Laboratory is like taking out an insurance policy for safe delivery.

Experienced engineers and crate designers use the latest in testing equipment in search for weakness that may result in transit damage to your valuable finished products. Assurance of safe arrival will result from pre-shipment testing in our National Safe Transit certified laboratory. Avail yourself of this service.

FOR SAFER TRANSIT BY • TRUCK • BOAT • TRAIN • PLANE

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street

Chicago 3, Illinois

Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois



AIM* for better securement of appliance shipments with Acme Steel Strapping Ideas



*Acme Idea Man
Dick Powers,
Fort Wayne,
Indiana, continually
services and
contributes new
ideas to all
his customers

ask your
***Acme Idea Man**
to help solve your
problems

A recent survey of Bastian Morley Co., Inc. customers shows less than 1% in-transit damage when shipping water heaters with Acme Steel's "anchor load" technique. (Idea 449).

Acme Steel Unit-Load Band permits many different size crates in one shipment. Anchor load allows "double decking" and makes possible meeting minimum car load shipment weight. You'll find that Acme Steel Strapping methods help speed preparation and reduce cost of bracing material. Customers welcome safe arrival and easy unloading.

There are many practical, money saving ideas for bracing appliance shipments. Your Acme Idea Man will gladly study your present system, demonstrate the excellent Acme Steel Strapping equipment and recommend the best strapping method for you. Call him at the Acme Steel Company listing in your telephone book. Or write for further information to Dept. RS-26.

ACME STEEL PRODUCTS DIVISION

ACME STEEL COMPANY

2840 ARCHER AVENUE, CHICAGO 8, ILLINOIS • ACME STEEL CO. OF CANADA, LTD., TORONTO



SAFE TRANSIT NEWS

NATIONAL SAFE TRANSIT COMMITTEE

Associations Building, 1145 - 19th St., N. W., Washington 6, D. C.



New Company Certifications - There are now 212 companies participating in the National Safe Transit Program. Latest certifications are:

General Electric Company, High Voltage Switchgear Dept.
Philadelphia, Penna.
Sentinel Radio Corporation, Evanston, Illinois
D. W. Whitehead Manufacturing Corp., Trenton, New Jersey
Hillside Metal Products Inc., Newark, New Jersey

New Laboratory Certification - The newest Safe Transit Laboratory is Pomeroy Mfg. Co., Inc., Vincennes, Indiana. The company manufactures corrugated shipping containers. The laboratory is the 45th to be certified under the Program on the basis of possessing all the necessary equipment to conduct the Safe Transit tests.

NST Program - A Public Relations Tool - Royal Electric Manufacturing Company, Inc., Chicago, Illinois has designed a simple and effective mailing piece to carry their Safe Transit Program to their power equipment customers. Using a minimum amount of words and illustrations, the mailing piece tells Royal Electric's customers how the company's participation in the NST Program is assuring the safe delivery of their products. The climaxing copy reads, "The Safe Transit Label is your guarantee of safe arrival". The piece is an excellent example of the public relations value of participation in the National Safe Transit Program. A copy of the mailing piece may be obtained by writing the Washington headquarters office of the National Safe Transit Committee.

AAR Educational Seminar - The Thirteenth Educational Seminar of the Association of American Railroads will be held the end of January. In cooperation with the National Safe Transit Committee, the Association will provide material on the NST Program to all those in attendance.

General Motors Corporation Uses NST Slogan - General Motors Corporation, Detroit, Michigan has distributed placards bearing the NST slogan to approximately 100 GM packaging men. This is the company's second distribution of the slogan which reads, "All manufacturing, engineering and quality efforts are in vain if the product reaches its destination in damaged condition". Commenting on his company's distribution of the slogan, Mr. R. A. O'Reilly, Jr., Service Section, wrote, "It seems to be the best summary of packaging engineering, in the fewest words".

Universities Feature NST in Packaging Courses - Mr. A. Beardsell of Container Laboratories, Inc. and Mr. A. W. Hoffman of Robert Gair Company, Inc. will show the Safe Transit film in the January 3rd session of the Packaging Course they are conducting at New York University. Mr. W. B. Keefe, Westinghouse Electric Corporation, has accepted the invitation of the Division of Adult Education, Purdue University, to present the NST Program at the February 25th session of the University's Packing Engineering Course.

Shipper-Carrier Cooperation - Keynote of NST Program - In 1955, Safe Transit Certified Companies used well over 11,000,000 labels to identify their packaged products meeting the Committee's pre-shipment test requirements. Carrier groups featured the label extensively in their educational programs, and each of the four leading carrier associations issued special statements pledging their continuing support of the Safe Transit labeling program.



Custom Protection
FOR YOUR
WASHING MACHINE



Handling shocks are resisted by the wood cleats, glued tube mat construction.

WATKINS has the container for your shipping problem

Watkins Containers provide—stacking strength—ease of assembly—minimum shipping weight, thus reduced shipping costs—smooth staple-free interiors—easy handling—minimum of storage space needed—protection from dust and dirt—resistance to “weaving” and shock—“Traveling Billboard” feature for product identification and advertising.

For home appliances, for *all* types of finished products, the Watkins Container is your best insurance for safe delivery. Ship your carefully manufactured products safely and economically—ship them the “WatkinsWay.”

these companies build WATKINS containers

Coxier Container Corp. 446 East 131st Street, Cleveland, Ohio
Crate-Rite Mfg. Co. 1015 Orient Street, Oakland 7, California
Dura-Crates, Inc. 940 East Michigan Street, Indianapolis, Indiana
General Box Co. 1825 Miner St., Des Plaines, Illinois and
16th and Maple Sts., Louisville, Kentucky
Humb & Martin Mfg. Co. P. O. Box 108, Murfreesboro, Tennessee
Illinois Box & Crate Co. 811 Center Street, Plainfield, Illinois

Kieckhefer Box & Lumber Co. 1711 West Canal Street, Milwaukee, 3 Wis.
Lane Container Corp. 10212 Denton Road, Dallas, Texas
Lewisburg Container Co. 243 Singer Street, Lewisburg, Ohio
Livingston Wood Manufacturing, Ltd. Tillsonburg, Ontario, Canada
Love Mfg., Inc. 608 South Commerce Street, Wichita, Kansas
Pennsylvania Box & Lumber Co. Terwood Road, Willow Grove, Pa.
Utility Crate Corporation 1985 E. 16th Street, Los Angeles 21, Calif.

—an inquiry to any of these companies will get prompt attention



The • WATKINS CONTAINER • Manufacturers

Conveyor system at G-E Appliance Park controlled by central operator

"fault-finding" panel provides instant checkup on system which automatically handles 700 refrigerators an hour across more than half a mile of grounds

AN interesting conveyor system moves packaged major appliances some 3,000 feet from production building to warehouse in 40 minutes without interfering with road or rail traffic.

The movement is handled by an unusual conveyor system containing nearly 4,000 feet of conveyors powered by 64 electric motors.

There is no waiting for containers or for a place to put them, either at the production building or the warehouse. They are delivered at a rate equal to production, with a metered maximum to eliminate undue surges at the discharge end. Packages on the conveyor line at the end of the day are allowed to remain in place.

As the packaged products are received from the assembly lines on three make-up conveyors, they are automatically marked with distinguishing spots of ink and grouped into trains approximately 24 feet long.

Approaching the exit lines the trains are identified according to the spots by a set of photoelectric scanning units and are switched onto one of six lines as indicated by the spots.

Spot selections may be set to switch the product trains to any exit line. If a line is broken, turned off, or full, trains destined for that line will switch to the next adjacent line — or to the next one that can accommodate it.

Storage area is provided in each exit line. In no event are the trains stopped in transit, except during rest periods or for emergencies, until they reach the storage area.

Central operator sees all—knows all

A central operator at a "fault-finding" panel can start or stop the system at any moment. By a signal system the panel permits the operator to locate and determine the nature of the fault the instant it occurs.

Movement of the packaged products on the conveyors is controlled by photoelectric relays. Signal stations are composed of two relays, each with an indicating light on the "fault-finding" panel. In this manner the operator can tell immediately if a photoelectric device has failed and have it repaired while the second unit at that station continues to operate the conveyors. The motor control is a key component in the system.

General Electric's Appliance Park is presently composed of five production buildings and one remotely located central warehouse.

The system was designed to deliver the major appliances in banded corrugated containers safely and economically. It sorts them into a number of product groups, even though the packaged products might be identical in size and weight. It is operated by one man for normal duty.

The system receives the cartons as they are discharged from the production lines and provides limited emergency storage. It is easily and quickly repairable in the event of a failure, to minimize "down" time.

The conveyor is a floor type, roll-to-roll progressive chain driven live roller system located in an elevated, enclosed trestle.

The transport system remains high enough to clear trucks and railroad cars until the products on it enter the warehouse. At that point the conveyors start a gradual decline to an elevation of approximately two feet above the warehouse floor.

Trains have "holding stations"

When a train is complete it is dispatched through a series of holding stations which provide emergency storage in the event of a failure. The trains are automatically dispatched from the

last holding station in each line through converging sections and emerge onto a main single line transport conveyor.

A timing device and a series of electrical control relays dispatch the trains in the order they arrived at the last holding station. They are dispatched at a minimum spacing of fifty feet on the transport conveyors to govern the maximum load on any conveyor and to have a gap between trains that will permit a device to sort the trains automatically at the discharge end of the system.

In the event of a failure somewhere on the transport line, all holding stations in each receiving line may be filled before production is stopped. These stored trains will automatically move onto the main line when normal operation is resumed.

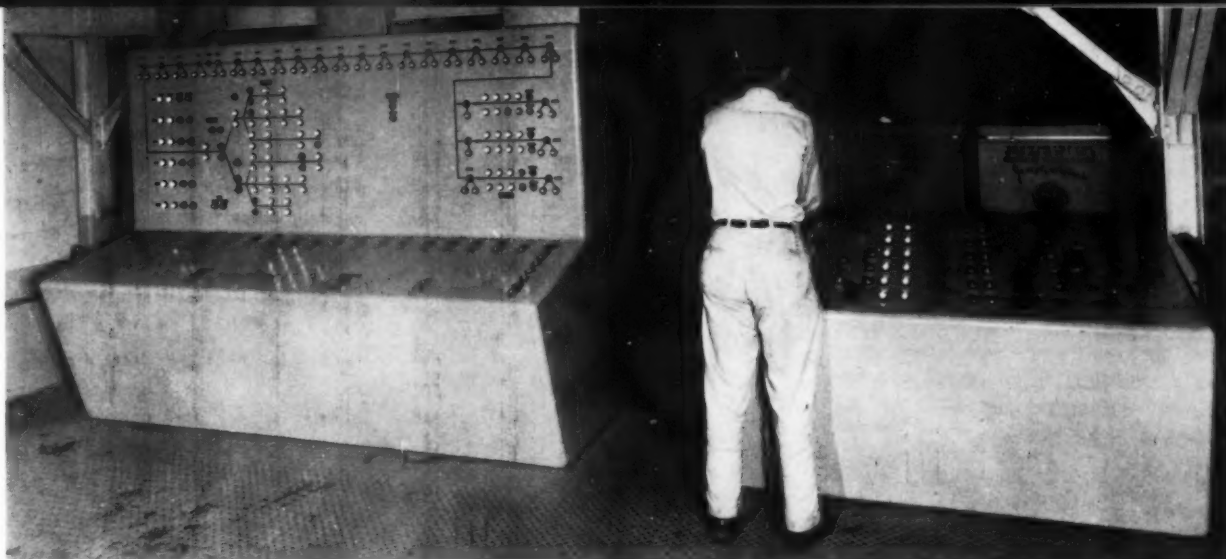
The transport line is made up of multiple conveyors, each independently driven but interlocked so that trains will not feed onto a stopped conveyor. In the event of a failure the conveyor at fault and all transport conveyors preceding it will stop. Manual controls are provided at each conveyor for testing and lock-out protection of workmen.

Panel indicating lights

inform operator

Each conveyor is provided with a drive near the center and an indicating switch on each end roller. Should any end roller stop the drive motor for that conveyor, the control operator is notified by a system of panel indicating lights.

The discharge end section of each storage line is a powered declining section arranged such that it receives approximately 12 feet of packaged products without packing them tightly together. Normally a truck and trailer backs up to the end of the declining section and receives the cartons on it.



Any failure along the 3,000-foot conveyor system is indicated immediately by signal lights on the "fault-finding" panel, at left. Operator's panel is at right where he controls the complete conveyor system.

As soon as the truck leaves, the declining section refills and waits for another trailer and truck.

The truck and trailer combination is used for long hauls of products. When the driver gets to the desired location he tilts the hydraulically controlled trailer until the cartons move off onto the floor. Fork trucks then take the products two at a time and either stack them or load them into trucks or railroad cars.

For short hauls and in-the-area stacking, products may be removed from the declining exit lines by fork trucks

from the side because of the loose grouping. Normally, side removal is not required except for emergency operations or rush hour relief.

The conveyor system is provided with an operator's panel at the receiving lines which is used for manual emergency operation only. There is also an operator's panel at the exit lines for manual emergency operation.

System is completely automatic

An operator is required at the fault-finding panel and standby personnel are required to remedy emergency conditions. The system has resulted in a

transport method that is out of the way and reliable. It is easily maintained and by the nature of its construction can be easily and quickly repaired. It is flexible enough to lend itself to many types of operation.

G-E engineers report that the roller sprockets and bearings show no noticeable wear after five months of operation. They report that packaged products are delivered at the exit lines 40 minutes after they leave the production line, that containers are not damaged, and that there is no danger of dropping or breaking in transit.

Refrigerators move automatically from production building to warehouse via roller conveyors located in an enclosed, overhead trestle.



DUNN ELECTED CHICAGO MILL PRESIDENT

Chicago Mill & Lumber Co., Chicago, has announced the election of John H. Dunn as president to succeed Chas. W. Gerlach, retired.

Dunn started with Chicago Mill on June 4, 1922, as a cost accountant at the Cairo, Ill., plant. He worked his way up to director and executive vice president in 1952.

The new president is optimistic about the future of his company and business in the major fields served by the company.

FORM NEW GAYLORD CONTAINER CORPORATION

Coincident with the merger of Gaylord Container Corp., St. Louis, with Crown Zellerbach Corp., San Francisco, a new company was formed, "Gaylord Container Corp."

The new company is a wholly-owned subsidiary of Crown Zellerbach, but it will manage the operations of the Gaylord facilities and will supervise the

sales of the products of these facilities.

Edwin J. Spiegel is chairman of the board and chief executive officer; Vertees Young is president, and Joseph M. Arndt, executive vice president.

ATLAS PLYWOOD NAMES CONTAINER SALES MANAGER

Alfred M. Blakesley, formerly sales manager, Door Div., has been appointed sales manager of the Container Div.,



Atlas Plywood Corp., announced Bert Cole, vice president in charge of sales.

Blakesley has also held the positions of general manager and plant manager of the Williamsport, Pa., and Laurel, Del., door plants.

CANADIAN NATIONAL PACKAGING CONVENTION

Award presentations and display of entries in three national competitions will be features of the Packaging Association of Canada's National Packaging Convention for 1956, Toronto, March 5-7.

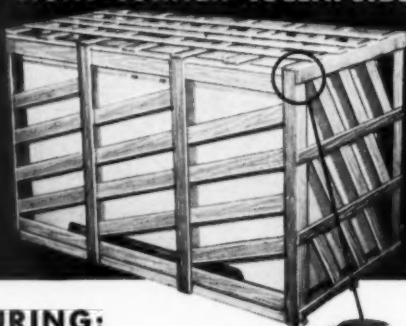
Held concurrently for the first time, the 1956 Canadian Consumer Package Competition, the 1956 Canadian Industrial Container Competition and the 1956 Canadian Point-of-Purchase Advertising Competition have been designed to bring recognition to outstanding Canadian produced packages and displays.

YALE & TOWNE APPOINTMENT

Charles T. Schwartz, formerly salesman, has been appointed Chicago Branch sales manager of The Yale & Towne Mfg. Co., Philadelphia.

BIGELOW-GARVEY'S SPECIALLY DESIGNED TIGHT-CORNER COLLAPSIBLE CRATES

HOME
FREEZER
CRATE



FEATURING:

Pre-Testing to Meet All Shipping Hazards • Extra Strength • Light Weight • Complete Plant Assembled Sections • Pre-Drilled Nail Holes for Accurate Nailing • Palletized Bundles for Fork Lift Unloading and Storage • Economical in Cost

Over 30 Years Packaging Experience



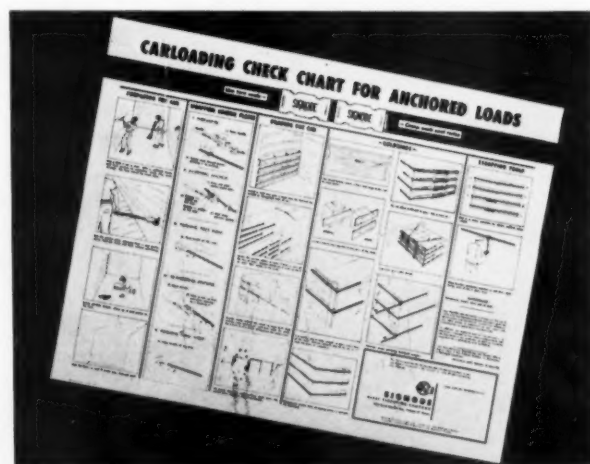
Write for complete details and prices to...
BIGELOW-GARVEY
lumber company
378 W. HURON STREET • CHICAGO 10, ILLINOIS
Phone WHirehall 4-5252

CARLOADING CHECK CHART FOR ANCHORED LOADS

Signode Steel Strapping Company, Chicago, is offering the Carloading Check Chart for Anchored Loads, pictured below. It is designed for shipping room and loading dock personnel.

This wall chart includes instructions for preparing the car, wrapping anchor plates, draping the car, bulkhead construction and use of strapping tools.

For your copy of this aid to freight carloading practices, please write to the Signode Steel Strapping Company, 2600 North Western Avenue, Chicago 47, Illinois.



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Customer Service YORK ST. AT PARK AVE., ELMHURST, ILLINOIS
"I saw your ad in finish"

CLASSIFIED ADVERTISING

HELP WANTED

TECHNICAL SERVICE REPRESENTATIVE

Here is a unique opportunity for a college graduate with degree in chemistry, metallurgy or mechanical engineering and 2 to 3 years experience in the metal finishing industry. This man will do technical service work for customers in the Chicago area who use our metal processing chemicals. Excellent starting salary with additional bonus arrangement after 6 months. Traveling expenses and company car provided. Excellent insurance and retirement plan. Write immediately giving full details to insure prompt reply. All replies held confidential.

PLEASE ADDRESS REPLY TO:

Pennsylvania Salt Mfg. Co.
 Personnel Department
 3 Penn Center Plaza
 Philadelphia 2, Penna.

CERAMIC COLOR TECHNICIAN

Outstanding opportunity for a ceramic color technician. If you desire a better opportunity to display your talents and really get ahead with one of the industry's most important manufacturers, we are willing to utilize your color experience and teach you the relationship of our business.

Write stating qualifications and experience in detail. Address reply to Box 256, c/o finish, York St. at Park Ave., Elmhurst, Ill.

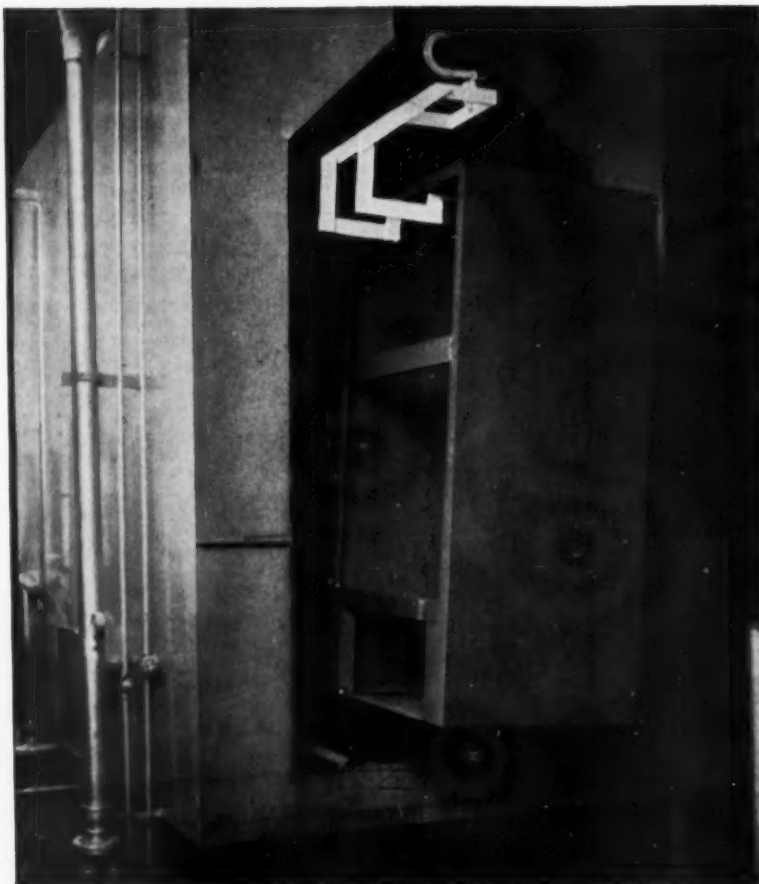
NEWS

NORGE WRINGER WASHER SALES

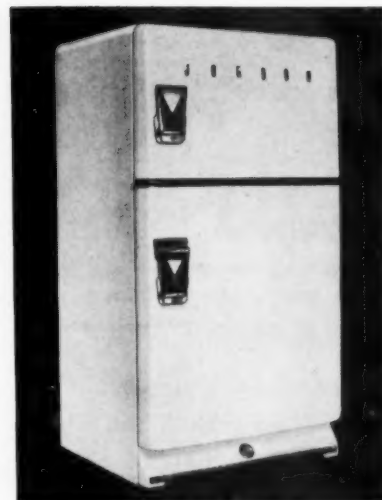
Sales of Norge conventional washers in the first December week almost doubled those for the entire month last year, according to Judson S. Sayre, president of Norge Div., Borg-Warner Corp., Chicago.

CANADIAN PROTECTIVE COATINGS CONFERENCE

The 10th Divisional Conference of the Protective Coatings Division, The Chemical Institute of Canada, will be held in Toronto, February 23 at the Royal York Hotel, and in Montreal, February 24 at the Ritz Carlton Hotel.



PART OF 5-STAGE GRANODIZING LINE at the Jordon plant. The Granodizing chemicals are sprayed onto the bodies from nozzles arranged to secure the most effective coverage of the steel.



TYPICAL OF THE FINE FINISH on Jordon equipment is that on the Model DU-21 "Duplex" Combination refrigerator-freezer.

GRANODINE® COATING INHIBITS RUST — BONDS FINISH ON FOOD FREEZERS

**Phosphate coating forms a positive barrier against rust,
provides a perfect bond for the priming coat and finish**

To protect its products from rusting, and to assure a uniformly high quality finish, Jordon Refrigerator Company, pioneer in both the domestic and commercial refrigeration and freezer industries, Granodizes with Granodine. This process forms a substantial coating of minute, uniform crystals of an insoluble, nonmetallic, nonconductive character on the steel. The coating not only provides a constant barrier against rust, but also affords a positive means of anchoring the paint finish to the metal. Granodizing with Granodine offers another

advantage, too — it prevents the spread of rust when the finish is accidentally chipped or scratched.

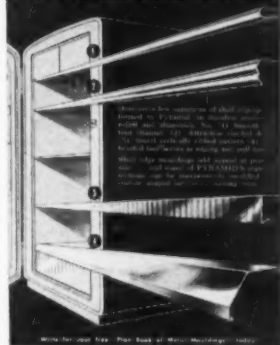
Still another advantage to the user of this process is offered by ACP. Its Engineering Department will help in the development of the process and process equipment. Its Service Department will make periodic inspection of the process in operation and the equipment. And its Quality Control Laboratories will run tests of finished coupons. All are free of charge — added services that keep the Granodizing process working effectively.

Write us for complete information about Granodizing with Granodine

AMERICAN CHEMICAL PAINT COMPANY, Ambler 33, Pa.
DETROIT, MICHIGAN NILES, CALIFORNIA WINDSOR, ONTARIO



SELL more... SAVE more...
with PYRAMID rolled shelf trim



Pyramid Mouldings Inc.
3343 WEST ARMSTRONG AVE., CHICAGO 31, ILL.
NEW YORK, CALIFORNIA

SEND FOR YOUR FREE COPY OF
"PLAN BOOK OF METAL MOULDINGS"

No one concerned with the
design or manufacture of any
appliance should be without
a copy of this book con-
taining hundreds of speci-
fied and special mouldings
used for your line com-
modity.

Without obligation, please send copy of
"Plan Book of Metal Mouldings" 1-10

Name: _____
Title: _____
Firm: _____
Address: _____

QUALITY INQUIRIES TESTIFY TO THE *Sales Effectiveness of* **finish**

**Measurable advertising results make finish
the consistent choice of those who sell to appliance and
metal products manufacturers**

As the experienced publication serving the appliance and fabricated metal products manufacturing field, **finish** magazine continues to show steady increases in circulation, service and advertising performance.

In circulation, **finish** has grown with the industry, adding selected readers in qualified plants. Today, it reaches over 9,500 specifying buyers in appliance and metal products plants.

In service its concept of editorial coverage includes all plant operations "from raw metal to finished product."

finish shows uninterrupted acceptance by advertisers who sell the appliance and fabricated metal products fields. In advertising revenue, for instance, **finish** gains since World War II are more than three times those of the average of all industrial publications.

Equally as dramatic as its gains in advertising are the measurable results **finish** delivers to advertisers — an example of which can be seen in the Pyramid Mouldings story below. Note that, while **finish** is not designed as a so-called "inquiry-producing" publication, it ranks high in reader response with all publications used by this firm and has consistently produced sales prospects for the company.

What better evidence that **finish** concentrates on the men who count in the appliance and fabricated metal products industry!

OVER 10,000 — 100% VERIFIED



E. L. STARNES, Director of Advertising
Pyramid Mouldings, Inc., Chicago, writes:

"We just recently completed a survey to test the effectiveness of our national advertising. You will be happy to learn that **finish** magazine stands high on the list of sound inquiry producers.

"In fact the September issue of **finish** magazine produced a record number of inquiries. Among these were some of the largest producers of mass metal products in the United States. A large percentage of these inquiries are signed by engineers and they figure very prominently in our sales picture."

Dana Chase PUBLICATIONS
YORK STREET AT PARK AVE. • ELMHURST, ILLINOIS

Reprinted from INDUSTRIAL MARKETING, November, 1955



finished to meet -AND SEAT-the public



American Seating Co. utilizes modern, continuous, conveyORIZED finishing methods . . . custom-developed Sherwin-Williams finishing materials . . . to produce highly mar- and wear-resistant finished units on a high-speed, high-volume basis.

Public life is strenuous—especially so for public seating built for schools, auditoriums and public buildings.

No one is more aware of this than American Seating Co., "World's Leader in Public Seating." For many years they have utilized the technical service facilities of Sherwin-Williams Industrial Research Laboratories to help meet special problems . . . insure benefits of new developments in finishing materials and methods.

Whether your finishing operations involve appliances and metal products, or the finest wood finishing systems, you will find Sherwin-Williams Technical Service equally helpful on your own problems. For information, write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio, or Montreal, Canada.

SHERWIN-WILLIAMS

INDUSTRIAL FINISHES

